JOURNAL OF THE
AMERICAN DIETETIC ASSOCIATION

VOLUME 15 June–July, 1939 NUMBER 6

METABOLISM OF NORMAL PRE-SCHOOL CHILDREN

III. Variations in Nitrogen Storage on Constant Diets[1]

THELMA PORTER

Department of Foods and Nutrition, Division of Home Economics, Michigan State College

THIS report deals with 43 nitrogen balance studies on three normal pre-school children. These data complete a series of observations on the extent and nature of the variations in the storage of the minerals, calcium and phosphorus, by children fed constant diets for a period of two months. The calcium and phosphorus balances have been reported in earlier communications (7, 8). It was found that both calcium and phosphorus retentions fluctuated rather widely in spite of a relatively constant intake of the minerals. It appeared from an inspection of the results as well as from statistical analysis of the two longer series of retentions, that from 15 to 21 consecutive days of observation were required to include the extreme range of variation in calcium and phosphorus retentions.

EXPERIMENTAL PROCEDURE

The nitrogen balances were determined at the time of the collection of the mineral metabolism data. As described in the experimental procedure of a previous report (8), the subjects were healthy, and in good nutritional condition. They included a boy, O, 2 years and 7 months old, 15 kg. in weight and 95 cm. in height; a girl, M, 4 years and 8 months old, 18 kg. in weight and 109 cm. in height; and another girl, J, 5 years and 6 months old, with a weight of 23 kg. and a height of 113 cm.

The children were cared for in the home of the writer, under the supervision of their mothers. There was very little change in environment due to the balance study procedures. The experimental calendar was made up of consecutive three-day balance periods, beginning in February and continuing to April, 1932. The time totaled 60 days and included 20 three-day periods. The older girl, J, served as a subject for the entire 20 periods; the boy, O, was studied for 17 of the 20 periods, 15 of which were successive. The third child, M, was available for only 6 periods.

The same three-day meal schedule, given in table 1, was repeated successively throughout the study and the intakes of each child were kept constant.

[1] Received for publication March 9, 1939.
The analytical work for this report was carried out in the Nutrition Laboratory of the Department of Home Economics and Household Administration, The University of Chicago.

TABLE 1

Daily food intakes of three children during a three-day dietary unit in a sixty-day balance study

FIRST DAY				SECOND DAY				THIRD DAY			
Food	Grams per day			Food	Grams per day			Food	Grams per day		
	O	M	J		O	M	J		O	M	J
Milk, whole	720	720	720	Milk, whole	695	695	695	Milk, whole	720	720	720
Bread	30	57	68	Bread	30	57	68	Bread	30	57	68
Butter	23	23	23	Butter	24	24	24	Butter	24	24	24
Orange juice	100	100	100	Orange juice	100	100	100	Orange juice	100	100	100
Oatmeal porridge	100	100	100	Rice "Pops"	10	10	15	Cream of Wheat	100	100	100
Graham crackers	16—24	16—24	24—32	Graham crackers	16—24	16—24	24—32	Graham crackers	16—24	16—24	24—32
Tomato-spaghetti	80	80	170	Potato, baked	40	40	40	Beef stew	75	75	150
Canned apricot fruit	30	80	90	Canned pears fruit	60	100	100	Canned peaches fruit	60	60	90
Canned apricot juice	15	50	45	Canned pears juice	30	50	50	Canned peaches juice	30	30	45
Apple sauce	100	100	150	Spinach	40	20	40	Jello	50	70	100
Bacon, cooked	10	10	15	Beef, lean	40	40	60	Bacon, cooked	10	10	15
Carrots, cooked	35	35	50	Bacon, cooked	10	10	15	Green beans	35	50	50
Sugar	8	8	8	Peas, creamed	60	60	75	Sugar	8	8	8
Vitavose	4		4	Bananas, E.P.	60	60	90	Water, distilled	500	750	300
Water, distilled	500	750	300	Sugar	8	8	8				
				Water, distilled	500	750	300				
Calories	1,404	1,537	1,680		1,349	1,462	1,653		1,321	1,416	1,620

For analysis, aliquot samples of the weighed food intakes and all of the urine and feces were made into three-day composites. Food and feces were dried to a constant weight at 80°C. and finely ground to a homogeneous powder. The nitrogen determinations were made by the official Kjeldahl method (1), and the factor 6.25 was used to calculate the protein. All figures in a balance represent averages of three analyses which agreed within 2 per cent.

The nitrogen intakes, excretions, and retentions were tabulated for statistical treatment. The mean of each series was calculated, along with its standard deviation, probable error, and coefficient of variation. The number of consecutive three-day periods required to give average retentions falling within the range of ± 4 PE of the mean was determined on each of the two longer series of balance studies. This calculation was used as the basis of estimating the desirable length of the observation period for nitrogen metabolism studies.

DISCUSSION OF RESULTS

Nitrogen Intakes: The total daily nitrogen intakes of the three children averaged from 6.42 gm. to 7.94 gm., as given in table 2. These represent protein consumptions of approximately 40 gm. per day for the youngest child (2.68 gm. protein per kilogram of body weight) to 50 gm. per day for the oldest (2.12 gm. per kilogram of body weight). Such levels of intake would undoubtedly be classed as medium, or possibly even low protein consumptions for children of these ages (2, 5, 9). These quantities of protein furnished about 12 per cent of the total energy value of the diets, and allowed for growth and the maintenance of excellent health during the period of observation. The medium levels of protein intake probably contributed to the successful administration of a constant diet for so long a period of time.

It will be noted in table 3 that the youngest child consumed the smallest total quantity of protein each day, but the highest quantity in relation to his weight. His average daily intake was 2.68 gm. of protein per kilogram of body weight. The oldest child ate the largest total quantity, but her "per kilogram" consumption was lowest. This confirms anew the well-known fact that the protein requirement of children varies inversely with age (2).

Table 4 shows the extent of variation in the nitrogen contained in diets kept as constant as possible throughout the period of study. The total nitrogen intake of subject J averaged 7.94 ± 0.03 gm. per day. The entire series of twenty nitrogen intakes had a standard deviation of 0.18 gm. of nitrogen per day, and a coefficient of variation, 2.3. The average daily nitrogen intake for subject O was 6.42 ± 0.02 gm. The standard deviation and coefficient of variation were 0.14 gm. and 2.1 per cent, respectively. These values are of the same order of magnitude as those for subject J. Because of a shorter period of observation, the values for subject M showed somewhat more variation, the intake being 6.66 ± 0.07 gm. per day, with a standard deviation of 0.26 and a coefficient of variation of 3.9.

Nitrogen Excretions: The average total nitrogen excretion for these normal preschool children ranged from 5.12 gm. per day for subject O, to 6.68 for subject J. These excretions represented approximately 80 to 85 per cent of the quantities

TABLE 2

Average nitrogen balances in grams per day from successive three-day periods in a sixty-day study on three children

PERIOD	INTAKE		EXCRETION				RETENTION		
	Total	Per kg.	Urine	Feces	Total	Per kg.	Total	Per kg.	Per cent intake
Girl J, 5 yrs. 6 mos. old, 23 kg. in weight, 113 cm. in height									
	gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*per cent*
1	7.40	0.329	5.72	0.94	6.66	0.296	0.74	0.033	10.0
2	7.98	0.353	5.42	0.87	6.29	0.278	1.69	0.075	21.2
3	7.85	0.344	5.17	0.83	6.00	0.263	1.85	0.081	23.5
4	8.08	0.353	5.26	0.89	6.15	0.269	1.95	0.084	23.8
5	7.76	0.339	5.21	0.81	6.02	0.262	1.74	0.077	22.7
6	8.02	0.348	6.04	0.89	6.93	0.301	1.09	0.047	13.5
7	7.75	0.335	6.09	0.73	6.82	0.295	0.93	0.040	11.9
8	7.83	0.333	5.73	0.95	6.68	0.284	1.15	0.049	14.7
9	8.07	0.343	5.55	0.82	6.38	0.271	1.69	0.072	21.0
10	7.93	0.339	5.81	0.83	6.64	0.283	1.30	0.056	16.5
11	8.10	0.343	6.19	0.80	6.99	0.296	1.11	0.047	13.7
12	8.24	0.349	6.27	0.92	7.19	0.305	1.05	0.044	12.6
13	7.87	0.332	6.24	0.74	6.98	0.295	0.89	0.037	11.1
14	8.05	0.338	6.02	0.84	6.86	0.288	1.19	0.049	14.5
15	7.77	0.327	6.19	0.77	6.96	0.293	0.81	0.034	10.4
16	8.13	0.340	6.16	0.78	6.94	0.291	1.19	0.050	14.7
17	7.84	0.328	6.13	0.71	6.84	0.286	1.01	0.042	12.8
18	7.88	0.328	6.28	0.78	7.06	0.294	0.82	0.034	10.4
19	7.94	0.330	5.74	0.76	6.50	0.270	1.44	0.060	18.2
20	8.28	0.342	6.00	0.65	6.65	0.274	1.64	0.068	20.6
Mean.....	7.94	0.339	5.86	0.82	6.68	0.285	1.26	0.054	15.9
Boy O, 2 yrs. 7 mos. old, 15 kg. in weight, 95 cm. in height									
1	6.49	0.444	4.21	0.60	4.81	0.329	1.68	0.115	25.9
2	6.44	0.438	4.65	0.48	5.13	0.350	1.31	0.088	20.1
3									
4									
5									
6	6.45	0.451	4.31	0.66	4.97	0.348	1.48	0.103	22.8
7	6.24	0.433	4.45	0.77	5.22	0.362	1.02	0.071	16.4
8	6.36	0.433	4.43	0.83	5.26	0.358	1.10	0.075	17.3
9	6.27	0.429	4.49	0.59	5.08	0.347	1.19	0.082	19.1
10	6.14	0.412	4.41	0.54	4.95	0.332	1.19	0.080	19.4
11	6.54	0.439	4.58	0.63	5.21	0.350	1.33	0.089	20.2
12	6.74	0.449	4.53	0.71	5.24	0.348	1.50	0.101	22.5
13	6.38	0.420	4.49	0.66	5.15	0.339	1.23	0.081	19.3
14	6.28	0.411	4.71	0.59	5.30	0.347	0.98	0.064	15.5
15	6.42	0.417	4.38	0.68	5.06	0.329	1.36	0.088	21.1
16	6.35	0.407	4.42	0.65	5.07	0.325	1.28	0.082	20.1
17	6.47	0.420	4.50	0.62	5.12	0.333	1.35	0.087	20.7
18	6.60	0.420	4.53	0.60	5.13	0.327	1.47	0.093	22.1
19	6.32	0.403	4.54	0.57	5.11	0.326	1.21	0.077	19.1
20	6.64	0.420	4.67	0.59	5.26	0.333	1.38	0.087	20.7
Mean.....	6.42	0.428	4.49	0.63	5.12	0.341	1.30	0.087	20.3

TABLE 2—*Concluded*

PERIOD	INTAKE		EXCRETION				RETENTION		
	Total	Per kg.	Urine	Feces	Total	Per kg.	Total	Per kg.	Per cent intake
Girl M, 4 yrs. 8 mos. old, 18 kg. in weight, 109 cm. in height									
	gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*per cent*
1	6.53	0.369	5.22	0.55	5.77	0.326	0.76	0.043	11.6
2	6.97	0.391	5.17	0.55	5.72	0.321	1.25	0.070	17.9
3	6.52	0.364	4.75	0.55	5.30	0.296	1.22	0.068	18.7
4	6.93	0.387	5.15	0.50	5.65	0.315	1.28	0.072	18.6
5									
6									
7	6.72	0.382	4.66	0.64	5.30	0.301	1.42	0.081	21.2
8	6.29	0.356	4.82	0.56	5.38	0.304	0.91	0.052	14.6
Mean.....	6.66	0.374	4.96	0.56	5.52	0.310	1.14	0.064	17.1

TABLE 3

Average daily protein intakes and retentions in grams from successive three-day periods in a sixty-day study on three children

PERIOD	J				O				M			
	Intake		Retention		Intake		Retention		Intake		Retention	
	Total	Per kg.	Total	Per kg.	Total	Per kg.	Total	Per kg.	Total	Per kg.	Total	Per kg.
1	46.25	2.06	4.63	0.206	40.56	2.78	10.50	0.719	40.81	2.31	4.75	0.269
2	49.86	2.21	10.56	0.469	40.25	2.74	8.19	0.550	43.56	2.44	7.81	0.438
3	49.06	2.15	11.56	0.506					40.75	2.28	7.63	0.425
4	50.50	2.21	12.06	0.525					43.31	2.42	8.00	0.450
5	48.50	2.12	10.88	0.481								
6	50.13	2.18	6.81	0.294	40.31	2.82	9.25	0.644				
7	48.44	2.09	5.81	0.250	39.00	2.71	6.38	0.444	42.00	2.39	8.88	0.506
8	48.44	2.08	7.19	0.306	39.75	2.71	6.88	0.469	39.31	2.23	5.69	0.325
9	50.44	2.14	10.56	0.450	39.19	2.68	7.44	0.513				
10	49.56	2.12	8.13	0.350	38.38	2.58	7.44	0.500				
11	50.63	2.14	6.94	0.294	40.88	2.74	8.31	0.556				
12	51.50	2.18	6.56	0.275	42.13	2.81	9.38	0.631				
13	49.19	2.08	5.56	0.231	39.88	2.63	7.69	0.506				
14	50.31	2.11	7.44	0.306	39.25	2.57	6.13	0.400				
15	48.56	2.04	5.06	0.269	40.13	2.61	8.50	0.550				
16	50.81	2.13	7.44	0.313	39.69	2.54	8.00	0.513				
17	49.00	2.05	6.31	0.263	40.44	2.63	8.44	0.544				
18	49.25	2.05	5.13	0.269	41.25	2.63	9.19	0.581				
19	49.63	2.06	9.00	0.375	39.50	2.52	7.56	0.481				
20	51.75	2.14	10.25	0.425	41.50	2.63	8.63	0.544				
Means...	49.63	2.12	7.88	0.338	40.13	2.68	8.13	0.544	41.63	2.34	7.13	0.400

of nitrogen consumed. These levels of excretion are somewhat lower than those found among children on higher levels of intake (5), and may indicate an efficient use of the medium levels of protein in the diet. The usual paths of excretion

are indicated in these findings. Most of the nitrogen was excreted in the urine, with the average daily quantities varying from about 4.5 gm. to 6.0 gm. in the different subjects. Smaller, and rather variable quantities of nitrogen were eliminated by the intestine, the fecal excretions ranging from an average of 0.56 gm. to 0.82 gm.

When the nitrogen intakes were plotted along with the nitrogen found in urine and feces, it was evident that there was no very striking relation between the occurrence of relatively high intakes and high outputs of nitrogen. There seemed to be a general tendency for the urine nitrogen to increase with slight increases in food nitrogen, toward the end of the period of observation.

As shown by the coefficients of variation in table 4, the average total nitrogen excretion was only slightly more variable than the nitrogen intake for each subject. This lack of constancy, especially in the small quantities of fecal nitrogen, is very likely due in part to the unavoidable discrepancies associated with the collection of excreta from human subjects. The urine nitrogen, with V's of from 2.6 to 6.0, was more uniform for each subject than the fecal nitrogen. Coefficients of variation for fecal nitrogen ranged from 8.0 to 10.9 on different subjects.

TABLE 4

Statistical findings on nitrogen balances, in grams per day, for three normal pre-school children

SUBJECT	NUMBER OF BALANCES	ITEM	MEAN	MEDIAN	STANDARD DEVIATION	PROBABLE ERROR	COEFFICIENT OF VARIATION
			gm.	gm.	gm.	gm.	
J	20	Food	7.94	7.94	0.18	0.03	2.3
		Feces	0.82	0.81	0.07	0.01	8.9
		Urine	5.86	6.01	0.36	0.05	6.0
		Total Output	6.68	6.75	0.32	0.05	4.7
		Retention	1.26	1.17	0.36	0.05	28.0
O	17	Food	6.42	6.42	0.14	0.02	2.1
		Feces	0.63	0.62	0.07	0.01	10.9
		Urine	4.49	4.49	0.12	0.02	2.6
		Total Output	5.12	5.13	0.12	0.02	2.4
		Retention	1.30	1.31	0.16	0.03	12.0
M	6	Food	6.66	6.63	0.26	0.07	3.9
		Feces	0.56	0.55	0.05	0.01	8.0
		Urine	4.96	4.99	0.25	0.07	4.9
		Total Output	5.52	5.52	0.22	0.06	3.9
		Retention	1.14	1.24	0.25	0.07	22.0

Nitrogen Retentions: The average total retentions of nitrogen ranged from 1.14 to 1.26 gm. per day. These retentions represent storages of from 54 to 87 mg. per kilogram of body weight, the youngest child storing at the highest rate in relation to his weight. Such storages used from 15 to 20 per cent of the total nitrogen intake. For subject J, the average daily total nitrogen retention for the 60-day period was 1.26 ± 0.05

gm. with a standard deviation of 0.36 gm. and a coefficient of 28. For subject M very similar values were obtained. For subject O, the average daily retention was 1.30 ± 0.03 gm. of nitrogen, with a standard deviation of 0.16 gm. and a coefficient of variation 12.

As was found to be true in the case of calcium and phosphorus retentions, nitrogen retentions showed a somewhat wider variation than might have been predicted from the carefully controlled experimental regimen and from the degree of variability reported on the intake. Of course it must be kept in mind that the quantities of nitrogen retained are small, so variations of relatively minute size result in fairly large coefficients of variation. The lowest nitrogen retention for subject J was 0.74 gm. and the highest 1.95 gm. These figures represent daily averages in three-day periods. The extreme range of variation then was 1.21 gm. For subject O, average daily nitrogen storage varied from 0.98 to 1.68 gm., a range of 0.70 gm. The range of variation for subject M was 0.66 gm. An inspection of the successive retentions for three-day periods reveals a rather wave-like change in the level of storage which, after reaching a high point, gradually lowers, then rises again. This type of variation in retention seems to indicate that more nitrogen might have been retained in periods of low retention had it been needed. In other words, the highest nitrogen retentions indicate periods of increased need and probably are not, under the conditions of this study, in any way dependent on previous nitrogen deficiency. This series of nitrogen retentions shows the danger of the selection of random balances as measures of a fixed level of nitrogen storage. In reality such chance balances may measure a high or low point within an expected range.

The number of consecutive three-day periods which would give an average storage falling within ± 4 PE of the mean of a given series was determined. For the two longer series, the averages indicate that from 4 to 6 periods, or from 12 to 18 days, were required to include the extreme range of variation in nitrogen storage, under the experimental conditions maintained. This period is about the same length of time needed for adequate measurement of mineral metabolism as reported in the earlier analysis of this study. Recent studies by other investigators (2, 5) have used periods of approximately this same length.

SUMMARY

Forty-three nitrogen balances on three normal pre-school children, 2½ to 5½ years old, are reported. Twenty consecutive three-day balances were secured on one child; seventeen balances, fifteen of which were consecutive, on another; and six on a third.

The nitrogen determinations on constant food intakes indicated daily protein consumptions averaging from 2.12 gm. per kilogram of body weight for the oldest child to 2.68 gm. for the youngest. These quantities of protein furnished approximately 12 per cent of the total energy value of the diets. The average daily nitrogen intakes were 7.94, 6.66, and 6.42 gm. for subjects J, M, and O respectively. For the subjects in this same order, the nitrogen storage averaged 1.26, 1.14, and 1.30 gm. per day.

The retentions of nitrogen in the two longer series of successive balances secured under controlled conditions varied

rather widely. An inspection, as well as statistical treatment, indicated that it required from four to six successive balances, or from 12 to 18 days, to cover the entire range of variation in these retentions.

The author wishes to acknowledge the inspiration, invaluable assistance, and advice of Dr. Lydia J. Roberts, chairman of the Department of Home Economics, University of Chicago; to thank the numerous co-workers for their very helpful cooperation, especially Mrs. Rachel Heninger and her two children, Dr. Louise McCluskey, Mrs. Marguerite Scott, and Subject J.; and to express appreciation for the use of the facilities of the laboratories of the Children's Fund of Michigan, so graciously extended by Dr. Icie G. Macy, for a part of the analytical work.

REFERENCES

(1) Association of Official Agricultural Chemists: Official and tentative methods of analysis, 1925. The Association, Washington, D. C.

(2) Daniels, A. L., Hutton, M. K., Knott, E. M., Wright, O. E., Everson, G. J., and Scoular, F.: A study of the protein needs of pre-school children, J. Nutrition 9: 91, 1935.

(3) Hawks, Jean E., Dye, Marie, and Bray, Merle M.: An improved technic of metabolism studies in pre-school children with a statistical determination of its reliability, J. Nutrition 13: 51, 1937.

(4) Hawks, Jean E., Bray, Merle M., and Dye, Marie: Effect of diet on the constancy of the urinary nitrogenous constituents excreted daily by pre-school children, J. Nutrition 13: 179, 1937.

(5) Hawks, Jean E., Bray, Merle M., and Dye, Marie: The influence of diet on the nitrogen balances of pre-school children, J. Nutrition 15: 125, 1938.

(6) Parsons, J. P.: Nitrogen metabolism of children with special reference to the protein requirement of children, Am. J. Dis. Child. 39: 1221, 1930.

(7) Porter-Levin, Thelma: Calcium and phosphorus metabolism of normal preschool children: I. On diets containing plain and irradiated cereals, J. Am. Dietet. A. 8: 482, 1933.

(8) Porter-Levin, Thelma: Calcium and phosphorus metabolism of normal preschool children: II. Successive balance studies showing the range of variation in calcium and phosphorus storage, J. Am. Dietet. A. 9: 22, 1933.

(9) Wang, C. C., Hawks, J. E., and Hays, B. B.: Metabolism of undernourished children: V. Protein metabolism, Am. J. Dis. Child. 35: 968, 1928.

BETWEEN-MEAL FEEDING IN INDUSTRY: EFFECTS ON THE ABSENTEEISM AND ATTITUDE OF CLERICAL EMPLOYEES[1]

HOWARD W. HAGGARD, M.D., AND LEON A. GREENBERG, PH.D.

Laboratory of Applied Physiology, Sheffield Scientific School, Yale University

IN 1935 we reported the results of a study of the effects of between-meal feeding upon the rate of production among factory workers (1). We were able to demonstrate a definite improvement in the output of certain types of piece-work operations when food was given to the employees mid-morning and mid-afternoon. Our study was limited entirely to rate of production, but we observed that the employees seemed more cheerful and attentive during the periods when the supplementary feedings were given. Alteration in disposition or any other subjective change could not, however, be determined reliably on these factory workers. Likewise the possible effects of the feeding upon absenteeism were not studied. The investigation of these matters was left until a more intelligent and cooperative group of employees could be obtained. The present paper presents this extension of our study.

In 1935 Comstock and Eddy (2) reported definite reduction in industrial absenteeism following a supplementary rest period luncheon. In a repetition of this study in 1937 a definite decrease in absenteeism from illness again occurred in a group fed between meals. Of equal interest to our investigation was the reported increase in cheerfulness among the employees who were fed. "Those directly in charge of the women report most favorably as to the benefits derived from having this service. Perhaps the most outstanding was the changed attitude, there being less nervous irritability and more good feeling" (3).

The extension of our original investigation was made in 1935 and 1936 with the facilities afforded by a large commercial office located at New Haven, Connecticut. One hundred twenty women from the clerical staff of one department volunteered as subjects. These women ranged in age from 18 to 48 with the majority between 25 and 35. They were engaged in sorting and checking charge slips and preparing the monthly statements for customers. This group had been employed previously in studies on the prevention of head colds and the individuals were not only intelligent but were frank in their attitude. For comparison, there were available complete records, extending back on most cases for several years, of absenteeism with causes, rate of production and errors in performance.

For the feeding experiments the employees were divided into two general groups, one containing 40 and the other 80 members. The first received no supplementary feeding but served as the control group; the second was given food mid-morning and mid-afternoon during the five-minute rest period that was already in practice. The supplementary feedings were furnished during alternate months over a period of five months. In each month in which food was given the

[1] Received for publication March 13, 1939.

control group was changed so that at the end of the last month each subject had been once in the control group and twice in the feeding group. Absenteeism, production and errors were recorded for each month of the experimental period and for the month preceding and following. The impressions of the employees were determined by questionnaires presented at intervals.

FOODS USED FOR SUPPLEMENTARY FEEDING

In our previous study (1) we correlated the increase of production after supplementary meals with a rise in muscular efficiency which we showed followed the taking of food. This rise is greatest after eating carbohydrate and considerably less after protein; it does not occur after eating fat alone. The rise and fall of efficiency follows closely the changes in the concentration of sugar in the blood. At least one ounce of carbohydrate is necessary to produce the desired increase in efficiency.

Supplementary feedings, as we have emphasized (1), are part of the daily intake of food and as such should be chosen with the same care for a balanced diet as the food of the regular meals. The food eaten between meals is subtracted from that eaten at other meals. For office workers it seems undesirable to give only carbohydrate. In these experiments we therefore supplied milk and fruit. The desired one ounce of carbohydrate can be obtained from two or three oranges or apples, from one banana or 1½ pints of milk. As in the study of Comstock and Eddy (2), bananas with or without milk were used for the supplementary feeding. One or two bananas were given at 10:30 in the morning and at 3:30 in the afternoon; if with milk, one banana was beaten finely in six ounces of milk to form a palatable beverage. The results obtained within the duration of the study showed no differences with the two kinds of supplementary foods used. The bananas were readily acceptable to the great majority of the employees as a daily addition to the diet; and they were easily served.

CUSTOMARY EATING HABITS OF EMPLOYEES

Before starting the supplementary feedings the customary eating habits of the employees were determined by questionnaires.

Eighty-nine per cent ate three meals a day and 11 per cent ate two. Thirty-six per cent never ate before going to bed; 55 per cent, occasionally; and 9 per cent, regularly. Fifty per cent never ate between meals; 31 per cent, occasionally; and 19 per cent, regularly. Of those who did not eat between meals, 11 per cent gave as their reason "not hungry;" 32 per cent, "fear of gaining weight;" and 37 per cent, "believed bad hygiene".

ABSENTEEISM IN RELATION TO EATING HABITS

Sixty of the 120 subjects never ate between meals; 37 ate occasionally; and 23, regularly. The rate of absenteeism during the previous year for the members of these three groups was obtained from the records kept by the company. Calculated on the basis of 1000 man-days of employment, those who never ate between meals showed an absenteeism of 20 days; those who occasionally ate between meals, 13 days; and those who ate regularly, 6½ days. The differences in absenteeism were almost entirely in

two disease groups, respiratory infections and diseases of the digestive system. These results, although suggestive of the advantages of between-meal feeding, are on too small a group to be reliable. Moreover, the less healthy members, and therefore most often absent, were especially concerned about their diets and probably fell mainly in the non-eating group because of the belief that eating between meals was unhygienic.

used in recording the absenteeism for the months between those in which supplementary feedings were supplied.

From table 1 it will be seen that in each instance the groups receiving supplementary feedings had, during the month, a distinctly lower rate of absenteeism than the control group. In the following month when no supplementary feedings were given the rates of absenteeism for all groups were essentially the same. Any beneficial effects from the feedings in one month were not carried over into the following month.

TABLE 1

Absenteeism in days per 1000 man-days of working time

MONTH	AVERAGE FOR ALL GROUPS	CONTROL GROUP	GROUP RECEIVING FOOD
February: No supplementary feeding	16.1		
March: Supplementary feeding	11.6	A 17.6	B and C 8.6
April: No supplementary feeding	14.4	A 14.8 B and C 14.2	
May: Supplementary feeding	10.6	B 15.6	A and C 8.1
June: No supplementary feeding	11.9	B 12.9 A and C 11.4	
July: Supplementary feeding	13.6	C 17.2	A and B 11.7
August: No supplementary feeding	15.1	C 15.0 A and B 15.3	
Averages	13.3	14.9	9.1

ABSENTEEISM IN RELATION TO SUPPLEMENTARY FEEDINGS

The rate of absenteeism during the period in which supplementary feedings were given during alternate months is shown in table 1. The employees are there divided into three groups: A, B, and C. Each contained 40 members. During the first month of supplementary feedings, group A served as the control while B and C received food; during the second month of feeding, B became the control group and A and C received food; and during the third month of feeding C became the control group and A and B received food. The same groupings are

The employees of the group studied were paid on a weekly basis; they received their wages during absences due to illness.

PRODUCTION IN RELATION TO SUPPLEMENTARY FEEDINGS

The occupations in which the employees were engaged were not suitable for a determination of the influence of supplementary feeding upon rate of production. The wage was fixed on a weekly basis; there was no piece-work and no incentive

by bonuses. The records of production and errors were maintained by the company as a check on the efficiency and industry of the individual workers. Moreover, employment at any one operation was not continuous through the month; an employee might be engaged in several different operations in the course of a single week, depending upon the amount and sorts of work at hand. A comparison of rate of production and errors during the months when the employees received supplementary feedings with those during the months when they received none, failed to show any marked advantage in these respects from the feeding. During the months when food was given there was on the average a 4 per cent increase in production and an 8 per cent decrease in errors. These values, however, were no greater than possible normal variations.

RESULTS OF QUESTIONNAIRES

Four questionnaires were filled out by the employees during the course of the study. The first was issued in February just before the first period of feeding. It was concerned mainly with the customary eating habits of the employees. An additional question asked whether it was believed that the work became easier or more difficult during the course of the morning and afternoon. Seventy-one per cent replied that it became more difficult; 29 per cent, that it was unchanged. Seventeen per cent of the employees volunteered the statement that they became restless during the late morning and afternoon, and that they found difficulty in concentrating.

The second questionnaire was issued at the end of March, the first month during which supplementary feedings were given; the third at the end of April and the fourth in August following the last period of supplementary feeding. The replies to these questionnaires established definitely the fact that the majority of the employees liked the supplementary feeding. Ninety-one per cent expressed a desire to have them continued; 9 per cent did not want food. Eighty-six per cent liked the particular foods employed for the feeding; 14 per cent would have preferred something else. Forty-eight per cent of the employees noticed that during the periods of supplementary feeding they ate less food at the regular meals; 40 per cent saw no change; and 12 per cent believed they ate more.

Seventy-six per cent of the employees said that they felt better and that they were less tired and nervous during the months when feedings were given. Eighteen per cent saw no change; and 6 per cent felt that the feedings were detrimental to their well-being.

The employees were invited to express their opinions fully with comments on the questionnaires and most did so, some to considerable length. A few employees, mainly the older ones, complained that the between-meal feeding upset their digestion. On the other hand a number of the employees commented voluntarily upon the fact that the supplementary meals, presumably because of the bananas, had brought considerable relief from constipation, from which they had suffered habitually. Many of the comments mentioned an improvement in disposition as "The feedings have helped me to concentrate and they have certainly helped my disposition and nervousness. My parents have commented upon my good nature upon arriv-

ing at home." It has long been a common observation that one of the accessory phenomena of hunger is irritability. Supplementary feeding assists in preventing this change in disposition which is particularly marked in certain individuals.

From the observations of the employees it was strikingly evident that the supplementary feedings at the rest periods improved the social relations in the office. In the month before feeding was begun the young women for the most part stayed alone or in small groups during the rest period. Some read books or played solitaire, while others walked about the room. During the months in which supplementary feedings were given the food was issued from a number of trays brought into the room. Twenty employees gathered around each table and engaged in a general discussion; sometimes they sang. The change in the social atmosphere was particularly gratifying to many of the women and several commented on the fact that this was the first time they had really become acquainted with many of the other employees.

CONCLUSIONS

A previous study has demonstrated an increase in production in certain piecework operations when supplementary meals were supplied to factory workers. The present study deals with the effect of such feeding upon absenteeism among clerical employees. Subjective impressions were also obtained by means of questionnaires. The great majority of the employees favored the supplementary feedings which consisted of bananas or bananas and milk and felt that they became less tired, were more cheerful and more attentive to their work. The social atmosphere in the office was strikingly improved during the periods in which food was supplied. Many of the subjects commented voluntarily on the relief of constipation presumably because of the bananas. There was a marked decrease in absenteeism among the employees receiving supplementary feedings as compared to those receiving none.

REFERENCES

(1) Haggard, H. W., and Greenberg, L. A.: Diet and Physical Efficiency, Yale University Press, 1935.

(2) Comstock, L., and Eddy, W. H.: The effects of a supplementary rest period luncheon on industrial absenteeism. J. Am. Dietet., A. 11: 239–242, 1935.

(3) Personal communication.

BASAL METABOLISM OF INDIANA UNIVERSITY WOMEN[1]

JULIANNA SMITH McCORD[2]

STUDIES on the basal metabolism of college women have been made in several localities. These studies have proved helpful in the knowledge of "normal basals" of women in these particular districts. However, in comparing these normals of different campuses with those of standard predictions of notable workers in this field, some discrepancies seem to exist.

Explanations of these rather inconsistent results have rested on the following causes: (1) standard predictions too high for women, (2) prolonged undernutrition of present-day college women, (3) deficient protein diets, (4) climatic differences and, possibly, (5) variances in altitude.

Since extensive basal metabolism work has been carried on in other localities, but none, to the knowledge of the writer, in Indiana, such a study has been concerned chiefly with the average basal metabolism of healthy Indiana University women.

SURVEY OF THE LITERATURE

The fundamental basis of the study of the metabolism of man can be traced to Lavoisier (1774) who discovered the significance of oxygen in respiration. By means of his crude calorimeter the amount of heat given off by the body was quantitatively measured by the amount of ice which it melted. Since his time physicians, chemists, and physiologists have improved respiration methods of measuring the rate of energy exchange in the body. Both direct and indirect methods have been employed for determining the lowest, or so-called "basal" rate of energy exchange or metabolism.

Nathan Zuntz, the first to realize the importance of absolute repose in determining basal metabolism, started the quest for knowledge of the lowest heat output of the body under what he termed "basal conditions". The results, it was found, varied greatly under certain clinical conditions and slightly under certain physiological phenomena.

Workers in various localities have taken up this study, especially its relation to diseases such as diabetes, thyroidism, fever, undernutrition, overnutrition, obesity, and various glandular disturbances.

Perhaps the best known workers of recent years are Benedict and Boothby of Iowa and DuBois of New York. Benedict and Boothby have improved various types of apparatus for basal metabolism determination and have helped in setting up prediction standards. DuBois has studied a great number of cases and has tabulated expected results for comparison with actual results.

In America much work has been carried on in the study of basal metabo-

[1] Submitted in partial fulfilment of the requirements for the master of science degree, Department of Home Economics, Graduate School of Indiana University. Received for publication November 20, 1938.

[2] The author wishes to express her sincere appreciation for the criticisms and suggestions of Dr. Una Robinson of the Department of Home Economics, Indiana University, and the assistance offered by Dr. Edith Schuman of the University Health Service.

lism. Atwater and Benedict constructed respiration chambers in which men could live, thus permitting the measurement of all gaseous exchanges in the body. Later, Benedict studied normal controls and constructed types of apparatus which were more appropriate for hospital use.

The respiration methods now in use for the determination of basal metabolism are many. In general, however, they may be classed as direct and indirect methods. The direct method is the chamber method such as is employed in the Atwater-Rosa-Benedict Respiration Calorimeter, in which both the gaseous exchange and the heat production are measured.

The indirect methods may employ the open or the closed apparatus. Examples of the "open circuit" are the Tissot and the carbon dioxide methods, which measure carbon dioxide output as well as the oxygen consumption. However, the "closed circuit" method, a means of measuring only oxygen consumption, is the one used most often in hospitals and schools. The McKesson, Benedict-Roth, Sanborn, and modifications of these are perhaps the most widely used.

Among the numerous studies of basal metabolism, several very interesting recent experiments have been carried on with university women by different workers. In comparing the average basal metabolism of these women with normal prediction standards, some inconsistencies are found. All the average results are below the standards which have been established, the reasons for which are attributed to various factors.

MacLeod and Rose (1) in 1925 were among the first to study this problem. They, however, did not use college students, but women of the ages twenty to fifty years. With 92 subjects they found the per cent deviation from predicted standards to be: Aub-DuBois, −8 per cent, Harris-Benedict, −5 per cent, and Dreyer, −2 per cent. From these results, they concluded that the generally accepted tables are too high for women.

Halfesbring and Borgstrom (2) in 1929 at Tulane University, Louisiana, made a study of 7 men and 2 women students. Their results were: DuBois, −18 per cent, Harris-Benedict, −16 per cent, and Dreyer, −14 per cent. These low results were attributed to a protein intake which was 60 per cent below that of the northern subjects.

Remington and Culp (3) in 1931 at the Medical School at Charleston, South Carolina, studied 93 nurses and 40 medical students. The deviations from the predicted figure of Aub-DuBois were −6.6 per cent for nurses and −6.1 per cent for medical students. These workers state that the climate, the amount of iodine in the diet, or the state of nutrition are not the reasons for the low values. They, however, attempt no further explanation for the deviation.

McKay (4) in 1931 studied the basal metabolism of 91 girls, 14 to 18 years of age. The older girls were from Ohio State University; the younger, Girl Scouts from Columbus. In comparison with the standards, she found her results higher than those of Benedict's predictions (based on Girl Scout data), and somewhat lower than Aub-DuBois standards.

These four studies just mentioned show the variation in basal metabolism results, and the tendency toward low

figures. All, however, were not made upon similar groups of individuals.

Tilt, Coons, Hetler, and McKittrick have studied rather large groups of college women on their respective campuses. For this reason, the comparison of the results of these four workers should be quite significant.

Tilt (5) in 1929 made a study of 52 college women who were natives of Florida. Her results were 10.6 per cent below the prediction standards of Aub-DuBois and 9.9 per cent below those of Harris-Benedict. She concluded that the basal metabolism of Florida college women was below normal and also below that of the northern standards.

Coons (6) in 1931 at Oklahoma studied 101 college women. She found the following deviations: −13.2 per cent from DuBois, and −10.1 per cent from Harris-Benedict. By dividing the subjects into class groups, she found that junior and senior nutrition students showed slightly higher averages than the other students. This, she pointed out, might only demonstrate the effect of selecting students from particular groups rather than at random.

Hetler (7) in 1932 at the University of Illinois studied the basal metabolism of college women in coordination with the protein intakes of these same subjects. The deviation from Harris-Benedict standard was 7.1 per cent low. Although she found no definite interrelationship between protein intake and basal metabolism, she suggested that their low protein intakes might explain the lower metabolism of women in comparison to that of men.

McKittrick (8) in 1936 at the College Agriculture and Experiment Station, Laramie, Wyoming, made a study of 100 college women. Her results were 3.2 per cent below the Aub-DuBois standard and 2.5 per cent below that of Harris-Benedict. The higher results found in this study, she explains, are due to the high altitude in Wyoming in comparison to that of the other localities.

These studies on college women, although carried out on various campuses, afford comparison of results from similar groups of individuals. The results, likewise, have been expressed similarly. Thus, these studies have been used for comparison in this paper and will be referred to again.

Considering the discrepancies between the so-called "normals" and the actual results of the various workers previously mentioned, a few experiments have been carried on to find some possible reason for and correlation of results from the standpoint of undernutrition of the present-day college women.

Tilt and Walters (9) when studying this problem, found no constant relationship between basal metabolism and protein or caloric intake.

Coons and Schiefelbusch (10) concluded from their experiment that the habitual food consumption of present-day college women is lower than it was a generation ago and that sub-adequate diets, especially deficient in protein, might probably be related to the low basal metabolic rates.

Hetler (7) found that there appeared to be no definite interrelationship between protein intake and basal metabolism, but suggested that the lower protein intakes of women may be, in part, responsible for the fact that their basal metabolic rates are usually lower than those of men.

Wang (11), on the other hand, found

no marked difference in basal metabolism under low and high protein diets.

Thus, as stated previously, standard predictions have been fixed too high for women, as is shown by all these studies.

Prolonged undernutrition and deficient protein diets may cause a lowering of the rate, yet Wang found that low protein diets had no effect. Her work, if carried over a longer period of time, might show different results. Generally, however, low caloric and low protein diets are considered possible factors in lowering basal rates.

Possibly southern climates have a tendency to lower basal metabolism, but this is not true in every case.

McKittrick, in correlating altitude with basal metabolism has a very strong point, yet all results do not fit into this pattern perfectly.

Undoubtedly, then, variances in basal metabolism results obtained by workers in this field, are caused by more than one factor.

PURPOSE OF THIS STUDY

The problem of the normal basal metabolism of university women of various localities is of considerable importance. Numerous factors may be involved in determining how the basal metabolism rates of these women will compare with accepted standard predictions and with women of other universities.

It has been found that Florida women, presumably, show a low metabolic rate due to the climate; and that Oklahoma women, while somewhat higher than the Florida women, likewise exhibit a low rate, due to prolonged undernutrition and especially low protein intakes. The Illinois women's low rate is explained by low protein intakes, while Wyoming women have a fairly high rate possibly due to the higher altitude.

The purpose of this study was to determine the average basal metabolism of Indiana University women, to compare these results with generally accepted prediction standards and to correlate these results, if possible, with those of other workers in this field.

PROCEDURE

Apparatus. The Sanborn Basal Metabolism Machine was used and tested frequently for carbon dioxide leakage. During the course of the experiment, the soda lime was changed once. The Kymograph was accurately timed and a new paraffin graph placed on the drum for each test. Three ten-minute tests were taken on each subject.

The room used for the testing was a small, quiet, two-bed room in which the heat could be easily regulated.

A few results were checked with the university technician, so that the results are as accurate as possible and the reliability of the machine used is unquestioned.

Subjects. All subjects selected were healthy university students, their ages ranging from 17 to 33 years, 87 per cent of the ages ranging from 18 to 24. Participating subjects were not limited to one school in the university nor to one class.

The physical education department recommended a large percentage of the subjects, while the other subjects, selected at random from different departments, were volunteers for the experiment.

The names of all subjects were submitted to the university physician for health ratings and only those women

with normal health scores were used as subjects for this study. The basal metabolic activities of 75 healthy women were used for calculation of results.

Conditions of the Experiment. The subjects were requested to report for basal metabolism testing before the first class in the morning and always before ten o'clock in the day. Except when special tests were taken during examination week, all subjects were instructed to obtain at least 8 hours sleep the night before the test. No food was consumed after the dinner meal of the previous evening until after the test had been taken. Unless accompanied by pain, menstrual periods were not avoided.

After removal or loosening of any tight clothing, the subjects were instructed to rest on the bed provided for their use. Then the temperature of the room was regulated and the shades lowered if the light caused any discomfort to the subjects' eyes. Under these conditions the subjects rested for at least one-half hour, and quite frequently they fell asleep during this period.

Basal Metabolism Testing. Before the metabolism test was begun, the fundamentals of basal metabolism were explained. The purpose of the test, the value of results obtained therefrom, clinical applications and the object of this particular study were emphasized. The presence of the operator at all times during the entire test was assured the subject so that any unnecessary fear of the apparatus might be avoided. Finally, the subject's cooperation in submitting to relaxation was requested. The subject was then in condition for the starting of a basal metabolism test.

Kymograph paper was placed on the drum, the oxygen bell filled, the mouthpiece inserted into the patient's mouth, the apparatus connected and the motor started.

During the first few seconds of the test the subject was watched very closely and advised to relax, to be less conscious about breathing, but not to go to sleep. If the subject seemed to have trouble in breathing, the apparatus was disconnected from the oxygen and the patient, and the motor stopped. After resting a short while the procedure was begun again.

After the first test, a relaxation period was allowed and questions were asked as to the subject's height, weight, age to the nearest birthday, class in school, residence in Indiana and days since last menstrual period.

The pulse was taken at the beginning of the second test, before the pen started on the actual ten-minute test period.

Again, a relaxation period was allowed before the third test. Usually the second and third tests proceeded without confusion on the part of the subjects.

The temperature of the water surrounding the bell jar was taken during each test. Barometer reading was also recorded.

After the third test the subject was released.

Expression of Results. The actual volume of oxygen consumed was recorded on the kymograph paper, and then corrected for temperature and barometric pressure. From tables this was then compared with DuBois standard predictions, which gave an approximate per cent deviation from his standards.

Although there are many ways of estimating body surface area, the "height-weight formula" of DuBois (12) was

used, because it is generally accepted and is best for persons of average shape. It is expressed as: $A = W^{0.425} \times H^{0.725} \times C$; A being the surface area, W the weight in kilograms, H the height in centimeters and C a constant, 71.84. The nomogram was not used, but the above formula was adhered to and checked with the nomogram.

From the data obtained, the surface area, calories per square meter per hour, calories per kilogram body weight per 24 hours and calories per centimeter body height per 24 hours were calculated.

Calories per hour and per 24 hours were then calculated, based on 4.882 as the calorific value of one liter of oxygen under standard conditions of temperature and barometric pressure.

Selection of Prediction Standards. Although there are many prediction standards, the tables as given by DuBois (modified by Boothby and Sandiford), Harris-Benedict, and Aub-DuBois (Sage) were selected for use in this study. These three standards seemed to be the most used at the present time.

DuBois' tables, modified by Boothby and Sandiford (13), are based on height-weight formulae and are expressed in calories per square meter per hour for age and sex.

Harris-Benedict's formula (14) is expressed in total calories per 24 hours and is based on sex, weight, height, and age. For women: $h = +655.0955 + 9.5634w + 1.8496s - 4.6756a$ where h equals total heat production per 24 hours; w, weight in kilograms; s, stature in centimeters; and a, age in years.

Aub-DuBois' (Sage) tables (15) are height-weight formulae expressed in calories per square meter per hour and are based on age and sex.

These three standards agree very closely. DuBois and Aub-DuBois tables are very similar. The former carries the results one decimal place further. The Harris-Benedict formula, on the other hand, is more time-taking than either of the two standards just mentioned, but is probably no more accurate.

RESULTS AND DISCUSSION

The data from the basal metabolism tests made on 75 Indiana University women may be summarized as follows: The averages for the group were 1260 calories per 24 hours; 33.6 calories per square meter per hour; the average deviation being −9.0 per cent from DuBois standard (as modified by Boothby and Sandiford), −8.3 per cent from the Harris-Benedict standard, and −9.6 per cent from the Aub-DuBois (Sage) standard. The following averages were also found: 182 cc. of oxygen consumed per minute, 53.0 calories per hour; 23.1 calories per kilogram body weight per 24 hours; and 7.9 calories per centimeter body height per 24 hours.

These results are low when compared with the generally accepted standards. Benedict (16) does state that it is accepted that the present standards are five per cent too high for women, but these results are about four per cent *below* even that allowance.

Only four subjects had basal metabolism rates above the normal. Three were only slightly above, while the fourth was 17 per cent above the DuBois table. This seemed a rather unusual case. However, the family history of the subject revealed that one of her parents had had a thyroidectomy.

Heredity may thus have accounted for these unusually high results.

On the other hand, five subjects, three of whom were seniors, showed basal metabolic rates of negative 19 per cent.

The results also show that all degrees of variation were manifested. Eight subjects, the greatest number of subjects at any single level of metabolism, had a basal rate of approximately negative 11 per cent.

In order to determine the difference, if any, which might be noted between different college class groups, results were divided into class ratings. The averages of the basal metabolism of the various classes in the university are shown in table 1. Seniors have a lower rate than any other one class.

Undernutrition, over-fatigue from extra activity imposed during the senior year or a general lack of fear of the apparatus are probable factors involved in lowering the rates of the senior class members. This is contrary to Coon's work (6), for she found seniors to have higher basal metabolic rates. Along this particular line further work should be carried on to determine actually the physical and dietary well-being of the various university classes in comparison to the senior class.

A special project was carried out on the effect of examinations upon the basal metabolism. These tests were taken after one final examination during the week, and on the morning when another was to be taken. The usual "basal" conditions were adhered to, except that the requirement of 8 hours of rest the night previous to the test had to be foregone. The results are shown in table 2.

This table shows that, in all cases observed, the rate was raised because of the strain of examinations. According to DuBois (15), Grafe estimates that 6 to 10 per cent of the total resting metabolism is contributed by the brain. Thus, the subject having prepared for a test would apparently have a higher rate than normal. Benedict and Carpenter (17) studied 22 young men during examinations and found the metabolism very slightly greater than when they were performing an equal amount of work that required no mental effort.

Although the number of cases studied at this time was small, the higher rates obtained during examination week seem quite probable since anticipation of an examination causes greater activity of nervous tissue.

As a matter of academic interest, the

TABLE 1

Basal metabolism of classes

CLASS	NO. OF SUBJECTS	DEVIATION FROM DUBOIS, MOD. BY BOOTHBY AND SANDIFORD		DEVIATION FROM HARRIS-BENEDICT		DEVIATION FROM AUB-DUBOIS	
		Range	Average	Range	Average	Range	Average
		per cent		*per cent*		*per cent*	
Freshman.....	13	+3.0 to −13.5	−8.3	+4.8 to −16.3	−8.0	+0.6 to −19.1	−10.3
Sophomore.....	14	−0.2 to −13.4	−9.3	−1.7 to −21.1	−10.4	−1.3 to −21.1	−9.8
Junior.....	24	+5.2 to −19.5	−8.5	+5.6 to −18.6	−7.5	+4.8 to −19.7	−8.5
Senior.....	17	−5.9 to −20.4	−12.2	−3.0 to −21.5	−11.0	−5.9 to −19.9	−12.5
Graduate.....	7	+16.9 to −13.2	−3.8	+20.5 to −14.9	−2.4	+16.0 to −14.1	−4.6

results of this entire study were compared with results obtained by other workers in the same field, but in different localities. According to tables 3 and 4 there is a closer correlation between work performed in the North and in the South than between that done in altitudes at which various other studies have been carried on.

Table 3 reveals no significant correlation between altitude and basal metabolic rates, while table 4 shows definitely lower rates in the South than in the North. The average temperature runs

TABLE 2

The effects of examinations upon basal metabolism

SUBJECT	PER CENT DEVIATION FROM DUBOIS MOD. BY BOOTHBY AND SANDIFORD		PER CENT DEVIATION FROM HARRIS-BENEDICT		PER CENT DEVIATION FROM AUB-DUBOIS	
	Normal	Examination week	Normal	Examination week	Normal	Examination week
K. W.	−7.6	−5.3	−10.9	−8.6	−7.7	−5.5
M. R.	−19.6	−17.2	−20.1	−17.7	−19.9	−17.5
A. G.	−14.1	−12.2	−15.3	−13.7	−14.8	−13.0

TABLE 3

Altitude comparison of various workers

YEAR	NO. OF SUBJECTS	WORKER	LOCATION	ALTITUDE (MEAN ELEVATION IN FEET) (18)	PER CENT DEVIATION FROM HARRIS-BENEDICT
1929	52	Tilt	Florida	100	−9.9
1935	30	Tilt and Walter	Florida	100	−13.0
1928	20	Gustafson and Benedict	Massachusetts	500	−3.0
1932	85	Helter	Illinois	600	−7.1
1938	75	Smith	Indiana	700	−8.3
1933	25	Stark	Wisconsin	1,050	−6.0 to −10.0
1931	101	Coons	Oklahoma	1,300	−10.1
1932	18	Coons and Schiefelbusch	Oklahoma	1,300	−11.8 approx.
1936	100	McKittrick	Wyoming	6,700	−2.5

TABLE 4

Climatic comparison of various workers (19)

STATE	CITY	ALTITUDE	AVERAGE TEMP.	AVERAGE ANNUAL HUMIDITY	BASAL METABOLISM RESULTS, HARRIS-BENEDICT
			degrees F.	*per cent*	
Wyoming	Lander	5,370	42	60	−2.5
Massachusetts	Boston	14	49	72	−3.9
Wisconsin	Green Bay	590	43	74	−6.0 to −10.0
Illinois	Chicago	600	48	74	−7.1
Indiana	Indianapolis	708	53	70	−8.3
Oklahoma	Oklahoma City	1,197	59	70	−11.8
Florida	Jacksonville	8	68	80	−13.0

surprisingly parallel to basal metabolism and even average humidity follows metabolism results very closely. The results here noted show that the present study fits in most precisely with the pattern as set up by other workers in their corresponding localities. Thus there must be a correlation between climate and basal metabolism rate, the higher rate being found in the North.

Another interesting fact observed was the effect of menstruation upon the basal metabolic rates. The average per cent deviation for the groupings, based on days since menstruation, is shown in table 5.

TABLE 5

The effect of the menstrual cycle upon basal metabolism

DAYS SINCE MENSTRUATION	AVERAGE PER CENT DEVIATION
0– 4	−10.2
5– 8	−9.6
9–12	−11.5
13–16	−8.4
17–20	−9.5
21–24	−2.4
25–28	−14.1
28–	Not counted

It is noted that metabolism drops as menstruation approaches, raises thereafter and is fairly low preceding the next period. These results follow very closely the work of Wakeham (20), also shown on the curve, in which the tendency towards high metabolism is noted in the pre-menstrual period with a fall in the rate after menstruation.

Since, to a certain extent, physicians have claimed that basal metabolism testing can be approximated by pulse rate, such a correlation of results was attempted. Since the junior class was the largest class represented, the results from that class, when plotted, showed that basal metabolic rate prediction by pulse rate alone is an entirely inadequate measure of basal metabolism. If the rate actually can be determined by pulse only, it is only a subjective measurement and probably is much less reliable than actual measurement by a standard machine and a careful operator.

In order to test the reliability of tables on basis of age, the average basal metabolism of different age groups was deter

TABLE 6

Average basal metabolism rates of different age groups

AGE GROUP (YRS.)	NO. OF SUBJECTS	AVERAGE DEVIATION		
		DuBois mod. by Boothby and Sandiford	Harris-Benedict	Aub-DuBois
17	1	−13.5	−16.3	−19.1
18	8	−8.1	−7.5	−10.5
19	12	−9.1	−10.5	−10.8
20	10	−9.7	−9.4	−9.9
21	15	−10.5	−9.3	−10.1
22	8	−8.3	−6.6	−8.5
23	7	−7.3	−6.7	−7.5
24	5	−8.7	−7.9	−9.0
23–25	9	−9.2	−6.3	−8.6

mined and the results are given in table 6.

From table 6 the results in a group of varying age seem out of proportion to those obtained with any other uniform age group. It would seem, then, that age could cause no discrepancy in any of the results obtained.

As a matter of interest from a precision and accuracy standpoint, the data of this study were treated statistically according to the method suggested by Sherman (21). The 75 results were used in accordance with the per cent deviation

from DuBois prediction tables. The probable error was found to be only 0.2523, while the standard deviation was 3.235 and the coefficient of variation was 35.94. Thus, considering that the entire study was one in which the operator, the machine or the subject might have been at fault, the number of probable errors are few.

CONCLUSIONS

From the results of this study of 75 Indiana University women, certain conclusions seem justified.

The generally accepted tables are too high for the average college woman. As Coons has suggested, prolonged undernutrition may be a great factor involved in these low rates. Possibly the protein as well as the caloric intake of present-day college women is too low.

Location and climate, of the factors involved, seem to be of greater import than altitude as suggested by McKittrick. Indiana residents, being north-centrally located, exhibit rates lower than Northerners and higher than Southerners. When tabulated together, all work on basal metabolism of college women, including this study, falls into correlation with the average temperature and average annual humidity of the location at which the various studies were carried on. The higher temperature and humidity are associated with the lower basal metabolic rate in almost every case.

Specifically, Indiana University women were found to have basal metabolic rates of 9.0 per cent below DuBois predictions, 8.3 per cent below those of Harris-Benedict, and 9.6 per cent below the prediction standards of Aub-DuBois. This allows a probable error of 0.2523.

Within the group of 75 subjects studied, seniors seemed to have the lowest basal metabolic rates. Extra activities carried during the senior year might help to explain the probable fatigue which resulted in lowered oxygen consumption.

In a small group of three subjects, tests taken during the final examination week were higher than the normal basal rates, due possibly to greater activity of the nervous tissue.

Tabulation of days since menstrual periods shows a drop in basal metabolic rate during menstruation, a slight rise afterward and then a lowering, followed by a marked rise before the next period.

Contrary to the belief of some, basal metabolism cannot be accurately determined by pulse alone.

The average basal metabolisms of different age groups are fairly constant, but all are low. Thus the standard tables used for the prediction of basal metabolic rates of college women in this locality are apparently too high.

Prolonged undernutrition and its probable part in causing low basal metabolic results among college women is a phase which should also be studied very closely in order to understand this whole problem.

REFERENCES

(1) MacLeod, G., and Rose, M. S.: Comparison of basal metabolism of normal women with present prediction standards, Am. J. Physiol. 72: 236, 1925.

(2) Halfesbring, R., and Borgstrom, W.: Studies of basal metabolism in New Orleans, Am. J. Physiol. 79: 221, 1926–7.

(3) Remington, R. E., and Culp, B. F.: Basal metabolic rate of medical students and nurses at Charleston, South Carolina, Arch. Intern. Med. 47: 366, 1931.

(4) McKay, H.: Basal metabolism of young women, Exp. Sta. Rec. 64: 492, 1931.

(5) TILT, J.: The basal metabolism of college women in Florida, J. Biol. Chem. 86: 635, 1929.

(6) COONS, C. M.: Basal metabolism of Oklahoma women, Am. J. Physiol. 98: 692, 1931.

(7) HETLER, R.: Protein intake and basal metabolism of college women, J. Nutrition 5: 69, 1932.

(8) MCKITTRICK, E.: Basal metabolism of Wyoming University women, J. Nutrition 11: 319, 1936.

(9) TILT, J., AND WALTERS, C.: A study of basal metabolism and diet of normal young college women in Florida, J. Nutrition 9: 109, 1935.

(10) COONS, C. M., AND SCHIEFELBUSCH, A.: Diet of college women in relation to their basal metabolism, J. Nutrition 5: 459, 1932.

(11) WANG, C. C., AND HAWKS, J., *et al*: The influence of high and low protein diet on the basal metabolism, J. Nutrition 3: 79, 1930.

(12) DUBOIS, D., AND DUBOIS, E. F.: A formula to estimate surface area, Arch. Intern. Med. 17: 863, 1916.

(13) BOOTHBY, W. M., AND SANDIFORD, I.: Normal value of basal or standard metabolism. Modification of DuBois standards, Am. J. Physiol. 90: 291, 1929.

(14) HARRIS, E., AND BENEDICT, F. G.: A biometric study of basal metabolism in men, Carnegie Inst. of Washington, Pub. No. 279, 1919.

(15) DUBOIS, E. F.: Basal Metabolism in Health and Disease, Philadelphia: Lea and Febiger Company, 1936.

(16) BENEDICT, F. G.: Basal metabolism of normal men and women with some consideration of the use of predicted standards, Am. J. Physiology 85: 607, 1928.

(17) BENEDICT, F. G., AND CARPENTER, H.: Basal Metabolism, U. S. Dept. Agric., Office of Exper. Sta., Bull. 208, 1909.

(18) Lincoln Library of Essential Information: Buffalo, New York: The Frontier Press Company, 1929.

(19) IBID.

(20) WAKEHAM, G.: Basal metabolism and the menstrual cycle, J. Biol. Chem. 56: 555, 1923.

(21) SHERMAN, H. C.: Chemistry of Food and Nutrition, New York City: The Macmillan Company, 1937.

THE COUNCIL ON FOODS

HARRIET MORGAN FYLER

READERS of the JOURNAL of the American Dietetic Association have seen advertisements in this publication with the small seal carrying the legend, "Accepted, American Medical Association, Council on Foods." Many readers probably have asked: what is the Council on Foods; why have a Council on Foods; and what does the seal of the Council on Foods mean? To answer these questions is the purpose of this article.

The advances in the newer knowledge of nutrition during the past two decades have been spectacular and far-reaching in their human applications. Manufacturers and advertising agencies have been alert to make use of this interest and knowledge. Health claims have appeared in the advertising of many food products. As today's food consumer does her preliminary shopping in the advertising columns or from the radio programs, it seemed to the Board of Trustees of the American Medical Association that an authoritative body was needed to pass on nutritional claims in the advertising of food products, in order to protect the public against false and misleading statements, and thus in 1931 they organized the Council on Foods.

Before the Council on Foods was organized, "health food" interests could put together a potpourri of bizarre products and foist them on the public as a panacea for whatever human imperfection and ailment the clever copy writer cared to mention. As a result of the public service of the Council on Foods and other agencies interested in the dissemination of truthful information about nutrition and the relation of foods to health and disease, consumers now are in a position to evaluate claims and to be more discriminating about the selection of foods.

The Council on Foods is composed of twelve persons eminent in those branches of knowledge directly concerned with food composition and nutrition, who are qualified to vouch for the merits of a food product and the advertising used in its promotion. To assist the Council members and facilitate their work, a headquarters staff of technical assistants is maintained at the office of the American Medical Association. The members of the Council are not paid for their services; they contribute their time and information freely. There are no fees in connection with the consideration or acceptance of foods or food advertising.

Any food which is sold under a label and its promotional advertising may be considered for acceptance by the Council on Foods on presentation of market samples of the food together with labels and copies of all advertising such as booklets, leaflets, magazine and newspaper advertising, statements on billboard displays, radio copy and the following information:

1. Name of product, name of both manufacturer and distributor and information relative to the extent of area of sales and advertising.
2. A complete list of ingredients and quantities thereof entering into the product.
3. Detailed information on the culture,

harvesting, collection, delivery, storage, freshness, selection, ripeness, quality, freedom from contamination, sanitation of the food itself. If the food is fabricated, specifications or definitions of all ingredients.

4. Precise and detailed description of all steps of manufacture from the initial stages of the raw materials to the final packing operation or shipment from the factory.
5. A report of a complete chemical analysis made by a reputable laboratory. This should include: data on moisture, ash or mineral matter, fat, protein, sugar, crude fiber and total carbohydrates (other than crude fiber), and sometimes other ingredients. This information provides a sound basis for judging the nutritional claims that can be made for the product. From the composition the calorie or fuel value may be calculated.
6. Claims for sterility must be supported by reports of microscopic and bacteriologic examination by a competent laboratory or bacteriologist.
7. Claims for vitamins must be confirmed either by references to authoritative studies in scientific literature or by direct biologic or chemical tests with market samples of the food product by a competent laboratory or analyst.
8. Conformity of the food product to terms and provisions of the federal Food and Drugs Act or federal food regulations must be assured.

Because of the necessity of conserving its resources, the Council has found it necessary to restrict its scope to those products which most require attention. Consideration is not given fresh fruits, vegetables, milk, and a few classes of well-known fabricated foods, but the Council from time to time reports on the nutritional claims made for any food product, regardless of whether or not individual brands are accepted.

The market sample of the food product, which it is desired to have considered, is noted and its label and advertising carefully reviewed by each member of the Council. If the Council members are assured that the food is wholesome and complies with requirements as to ingredients, composition or nutritional values prescribed by them or by the government under federal food statutes and if the label and advertising are considered truthful and proper for the food, acceptance is granted for two years. At the time of acceptance, the manufacturer or distributor of the food product must agree to maintain the food and all advertising subsequent to acceptance in complete accord with the rules and regulations of the Council. Firms are permitted to use new claims in their advertising provided such claims are first submitted to and accepted by the Council. At the end of each two years the product and its advertising are submitted to further review to determine whether acceptance can be extended.

All of this work is carried on through correspondence and by the issuance of weekly mimeographed bulletins to each Council member. For this purpose a stenographic staff is maintained at the headquarters of the American Medical Association. Annual meetings also are held in Chicago for discussions.

Notice of acceptance of a product is published in *The Journal of the American Medical Association*, and in the forthcoming book "Accepted Foods." All food products accepted by the Council are entitled to display the "Seal of Acceptance" on the label and advertising.

The seal of acceptance denotes that the food product and the nutritional claims made for it are acceptable to the Council on Foods. The seal is not a recommendation, neither is it a certificate or guarantee of purity. The seal does mean that the product on which it appears is produced by a manufacturer who has supplied all the information demanded by the Council. The seal is, in a sense, a token which means that the advertising is in harmony with the rules and decisions of the Council on Foods.

Not all food products submitted to the Council on Foods are acceptable. A food product is not eligible for the list of accepted foods if the manufacturer or distributor is unwilling to disclose any facts regarding its preparation. The Council is of the opinion that the public deserves to know the ingredients of the foods it purchases. There are no sound arguments justifying secrecy about the composition of foods.

A food product is not accepted if its identification label is not properly informative or if the trade name is misleading or deceptive by implication. An ideal food label has the common name of the food or a descriptive statement of the identity of its ingredients arranged in the order of their decreasing proportions by weight in the food and in easily legible type in proximity to the trade name on the label.

A food product is not accepted if the submitted advertising used in its promotion contains unwarranted nutritional or health claims, even though the composition, method of manufacture and labeling of a food product appear in other respects to conform to the requirements of the Council.

Examples of unwarranted nutritional claims are the following statements about a brand of sugar: "Sugar is the greatest energy builder available to mankind . . . it supplies vim and vigor to the child and strength and energy to the grown-up . . . the old belief that sugar affects the teeth has long since been disproven by scientists . . . sugar is among the foods least harmful to the teeth . . . overweight never has been and cannot be attributed to an increase of intake of sugar or any other single foodstuff . . . the place of sugar in the human diet depends on the taste and inclination of each man, woman and child."

Sugar supplies food energy. It does not build it. All foods except the simple mineral foods and water contain chemical energy available for use by the healthy body to support its many activities and life processes and to maintain its temperature.

Sugar does not "energize the body" or "supply vim and vigor" to either children or adults. Vim, vigor, strength and activity depend on many factors, including freedom from disease, natural constitution, physical environment, training, habits and other factors.

The belief that sugar affects teeth has not been disproved by scientists. On the contrary, it is generally agreed by dentists and experts in nutrition that sugar taken in excessive quantities is among the foods most detrimental to the teeth, although there is no general agreement on how it operates.

Overweight in many persons has been and can well be attributed to an excessive intake of sugar.

The Council on Foods recognizes that sugar is a wholesome and valuable food when given its proper place in the balanced diet. It supplies calories and is

classed by experts on dietetics as a desirable flavor food. However, the ingestion of excessive amounts of a chemically pure food such as sugar interferes with nutrition to the extent that it cuts down on other food substances such as vitamins and minerals, which are associated with less highly refined products.

Equally objectionable are unwarrantable health claims predicated on personal charm and social preferment such as: "So many women lose their good looks after thirty. They fail to realize the importance of what they eat day after day . . . " with the implication that a food such as bran will cure the discomfort, headaches, poor appetite and listlessness of the person who has lost her good looks.

Health claims based on either flagrantly incorrect or misleading statements such as the following are not acceptable: "Modern science discovers grape juice burns up fat . . . Get thin the new way . . . simple grape sugars are quickly absorbed and used and hence not stored as fat . . . non-fattening grape sugar forces the body to burn up its fat . . . " These claims would falsely lead the reader to believe that a brand of grape juice has specific properties for reducing weight.

Grape juice is no more effective for reducing weight than are many other common foods. It does not "burn up fat" and its sugar plays the same part in fat metabolism as does any other available carbohydrate. The sugars of grape juice may be "stored as fat" under proper conditions, as are any sugars or other carbohydrates.

Neither are claims of recommendation, approval or use by physicians, health or medical authorities for specific foods acceptable, such as the following remark applied to a brand of fresh, compressed yeast by a "well-known physician": "Eat it regularly and yeast will help clear up adolescent pimples." As far as the Council on Foods is aware, there is no adequate evidence in support of the claim that eating yeast will "help clear up adolescent pimples," and the Council does not recognize any therapeutic claims of this nature for any brand of yeast. Vague claims for foods, such as "clinical experience has demonstrated its efficiency," are not informative to the public or physicians and because of misleading therapeutic implications are objectionable.

The Council on Foods, however, is not "the big, bad wolf" of food manufacturers and distributors. On the contrary, if a food and its advertising do not comply with the requirements of the Council, the manufacturer or distributor is notified and allowed a reasonable time to make recommended changes in the advertising or in the composition of the food. If the manufacturer is unwilling to make these changes, notice of nonacceptability is published in *The Journal of the American Medical Association.* When rejected foods or advertising comply with Council requirements they may become eligible for acceptance. Thus the Council hopes to institute a system of self control by which the food industry will be governed within itself by established knowledge, for the welfare of the public and of the entire food trade.

Advertising acceptable to the Council on Foods discusses nutritional values but avoids specific health claims; it recognizes that health depends on the diet as a whole and on many factors

other than foods—not on any one food brand nor any one type of food.

Meritorious foods require no exaggerated, false, misleading claims. It is only the inferior food with alleged fictitious values that requires gross superlatives and exaggerations, and flamboyant, vague and mysterious claims.

The seal of acceptance on a food product means that the nutritional qualities of the food are what the manufacturer claims them to be and that the advertising conforms to the rules and regulations of the Council on Foods.

In addition to this service the Council publishes authoritative statements on nutritional subjects. To date the following articles have been published:

The Apple in the Management of Diarrhea in Children
The Nutritional Significance of Bran
The Alleged Decalcifying Effect of Cereals
The Nutritional Significance of the Curd Tension of Milk
Dextrose—Its Place in the Diet of Normal Adults
The Nutritional Significance of Gelatin
Mineral Oil in Foods
The "Normal" Diet
The Nutritional Value of Spinach
Strained Fruits and Vegetables in the Feeding of Infants
The Vitamin C Content of Commercially Canned Tomato Juice and Other Fruit Juices as Determined by Chemical Titration
Vitamin D Milk
The Present Status of Vitamin D Milk
Vitamin D Milk Produced by Feeding Cows Irradiated Yeast

Single reprints of these papers are available for the asking from the office of the Council on Foods of the American Medical Association.

THE PAPER MILK CONTAINER

LOUISE PICKENS TANNER

METHODS for delivery of fluid milk have changed as reasons for such changes became apparent and as improvements were developed which could replace existing methods. Many milk dealers of only a generation ago delivered milk from large cans or pails to vessels provided by consumers. Realization of the unsanitary features of this practice resulted in introduction of glass bottles. Now paper milk containers, which appear to eliminate some of the undesirable features of glass bottles, are appearing in increasing numbers in many communities. Such containers have the distinct advantage that they are used but once.

Experiences of bacteriologists have shown that cleaning and sterilization of glass milk bottles present serious problems. It is this lack of an entirely satisfactory method that makes them a possible hazard to the health of a community. In fact, outbreaks of communicable diseases which have been traced to glass bottles might have been obviated by single service packages. That the problem is a serious one is indicated by committee reports of the American Public Health Association and elsewhere. Hunt (1) attributed infection of a milk supply to bottles collected from homes in which cases of communicable disease existed. Gibbs-Smith and Hobday (2), after infecting milk with *Eberthella typhosa* and placing it in glass bottles, were able to isolate the organism from two of four bottles after cleaning. Layson, Huffer and Brannon (3) found bacterial contents of washed and "sterilized" glass bottles from 25 different dairies operating in accordance with standard practice, quite variable. In any case of 12 bottles, 2 or 3 might be sterile, or at least yield no bacteria in a rinse test, while others might yield as many as 180,000 to 200,000 per bottle. The generally accepted standard (4, 5) for a clean milk bottle is that it shall contribute no more than one bacterial cell, or colony, per cc. of capacity, which means slightly less than 1000 per quart bottle. In comparison with this standard, the "clean" bottles, examined by Layson, Huffer and Brannon, were quite dirty in that some of them carried many more bacteria than should be tolerated in washed and sterilized glass milk bottles. In a committee report before the American Public Health Association, Holmquist (6) reported a state health department as finding 22.6 per cent of 1820 bottles with counts in excess of 10 per cc., and 43.1 per cent in excess of 1 per cc. capacity.

In June 1938, the state board of health of Maryland adopted a measure requiring the use of single service containers where facilities for proper cleaning, rinsing and disinfecting of food containers are not available (7). California, too, is attempting to control the used container situation. If states are aware of the need for legislation concerning containers for miscellaneous food products, it is evident that great care should also be taken with those used for such a perishable commodity as fluid milk. These experiences, if representative of conditions in the dairy industry, are definite evidence that from a public health point of view the glass milk bottle,

because it is used over and over again, may constitute a real problem.

Retail stores find the return of glass bottles troublesome. Many store sales are from more or less transient trade, and various schemes to induce returns, such as deposits, are a nuisance. Losses are also increased by breakage which has been reported to be 4.7 times as great on store glass bottles as on retail route bottles. The return of the half-pint bottle used in all public eating places also constitutes quite a problem.

The paper container is used but once, and thus prevents possible distribution of pathogenic bacteria which has occasionally resulted when containers are re-used. The original container has so few bacteria that the bacterial content of milk is not influenced.

The cost of this new container is largely offset by savings as a result of eliminating pickup, cleaning and sterilization costs. One manufacturer claims that single-service containers can be made at a cost of less than one cent apiece (8). Paper milk containers might prove to be cheaper where the returns are low, yet might be costly where this problem is not so important. In some places the trade prefers to pay a little more for a paper bottle than to be bothered by returning a glass bottle. Bartlett (9) believed that the use of paper bottles in the store distribution of milk is economically sound to the extent that it lowers distribution costs and is accepted by consumers.

Certainly the convenience of the paper package, its ease of transportation and reduced weight should interest the milk man and the consumer who has to carry bottles from a store. A case of 12 filled glass bottles weighs about 64 pounds as against a weight of about 27 pounds for filled paper bottles. An aesthetic factor, in favor of the paper container, is that the usual odors of a dairy, a combination of stale milk in unwashed returned bottles, steam, and soggy wooden crates, are not found in the dairy which uses only paper containers. The effect of light in development of off flavors is less with paper containers (10) than in glass bottles, a condition too frequently unappreciated by the consumer.

Consumer preference for the paper milk container was evident from 221 replies to a questionnaire sent to customers on a university route following use of both paper and glass containers throughout a period of some months (11). Such reasons as these, aside from the public health aspects, were given for the preferences: less space occupied in the refrigerator, easier to open and close after once being opened, no washing necessary, no breaking or chipping, no bottles to be returned, excellent for picnics as they pack easily and are disposed of easily, less weight on the refrigerator shelf, empty bottles are good for kindling fires, and they eliminate noise of bottles and cases in the early morning.

Some consumers objected to paper containers because they are not sufficiently translucent to show the cream line. Others complained that cream cannot be removed as easily. The first objection need not be taken seriously since laws now prevent milk dealers from selling milk with too little butter fat. Today there is a growing tendency on the part of dairymen to homogenize whole milk. This milk, of course, shows no cream line, and with its universal

adoption, both objections will become invalid.

The paper container is by no means perfect. For instance, bits of paraffin have been occasionally reported in the milk and some containers have not kept their shape well. Manufacturers and research chemists are working diligently to overcome such defects. It seems probable that they will entirely disappear in the near future.

As is frequently the case with a new venture, consumer prejudice against the use of paper packages for milk must be overcome by means of consumer education. On the whole, however, paper containers have been received with enthusiasm by both the dairy industry and consumers. Most health officers are convinced of their value from the health standpoint. Experience in New York's metropolitan district, as well as in other cities, has indicated unquestioned consumer acceptance. During 1937 about 125,000,000 bottles of one type alone were used. About one-fourth of the packaged milk and cream of New York City was furnished in paper according to a 1937 report of the city department of health. That it pleases the home-maker is shown by the results of a questionnaire (11) and by the experience of manufacturers, one of whom said, "The suitability of our present container is evidenced by the fact that we are now supplying millions of containers weekly to the dairies of the New York metropolitan district. This quantity at the present time is the limit of our productive capacity but still fails to supply the demand of the trade" (12).

The remainder of this paper will be devoted to types and sanitary aspects of paper milk containers. In 1909 dairymen in Los Angeles were using a single service container of wood pulp. Little attention, however, was given this innovation either by those in the fluid milk industry or by milk sanitarians. At present these containers may be roughly divided into three types: pre-fabricated and requiring a special filling machine in the dairy; pre-fabricated and not requiring a special filling machine, it being possible to use the regular glass bottle filling machine; and those formed and paraffined in the dairy just before filling, requiring a special machine for the purpose.

One container is printed and shipped flat to the dairy plant, where it is shaped, paraffined, filled and closed on a special machine. This bottle has the advantage that it is shipped flat to the dairy. A disadvantage is that because of so many attendant operations, it is possible to fill only about forty bottles per minute.

Still another bottle is round with the top brought together for closing with six metal clips. One of these may be lifted and the paper separated to make a pouring lip. These bottles are made, filled and closed on a special machine.

The last bottle to be described is one of two made and sealed in the factory and shipped to the dairies in sealed carriers. The container, made of paperboard waterproofed with paraffin, is opened, filled and closed on a filling machine in the dairy. The filling and closing machine may be operated at a rate of around seventy bottles per minute. The rectangular shape of this container permits solid packing and a consequent low rate of heat gain during merchandizing.

The paper-board used for milk containers is made from the finest spruce

pulp obtainable, not from waste paper. The bottles are coated inside and out with hot paraffin and so handled that they are practically devoid of living bacteria. A description of the manufacture of paper-board and one type of container indicates the care given to their fabrication (13).

The paper, fabricated under most careful control, has a low content of microorganisms, and the container made from it has likewise been shown to be remarkably free from microorganisms. About 80 per cent of the containers of one type are free from bacteria, as determined by a rinse test. Those which are not sterile seldom show more than two bacterial colonies per quart container, a number far below the generally accepted standard of 1000 colonies for quart glass containers.

Whether or not there is more merit in a pre-fabricated bottle or one shaped and finished in the dairy, is an open question. Bacteriological examination of paper milk bottles from four different manufacturers led Rice (14) to state that bottles made and sealed in the factory were better than those shaped and finished in the dairy. A few cities in the United States have ordinances requiring that bottles be paraffined in the dairy just before filling. These were probably adopted without adequate knowledge because, on the basis of Rice's findings, this is quite unnecessary. Paraffining at the customary temperatures (160°–180°F.) brings the paper milk container well within the definition of sterility accepted in the dairy industry, *i.e.* elimination of all pathogenic bacteria and marked reduction in the total count (6).

The health aspect of the paper milk container has been the subject of two conferences of some sixty representatives of health departments, paper-board manufacturers, makers of paper and paper-board containers, research workers and others (15, 16). The concensus was that only pure virgin mechanical or chemical pulp should be used, which at no time should harbor more than 500 microorganisms per gram of disintegrated paper; non-fermentable adhesives must be used; paraffining must be done under conditions which will impart no flavors or odors to paraffin or milk; containers must be shipped under conditions which will insure no abuse; and the fabricated containers must be examined bacteriologically according to the latest approved methods of the American Public Health Association. The generally accepted standard for quart glass bottles is less than 1000 colonies; for pint containers, less than 500; and for half-pint, less than 250 bacteria per container (Standard Methods of Milk Analysis, p. 58, 1934).

From the evidence at hand, it seems that a distinct advance in merchandising of milk has been made by the development of one-service paper containers for retail trade. They appear to meet all the requirements of a satisfactory receptacle for distributing fluid milk. Convenient to handle, not too expensive, and used but once, the great majority (80%) yield no microorganisms. Those which have contained microorganisms, yielded on the average only about two cells per quart container. Thus, according to Prucha (17) "The ideal package for fluid milk has just about been attained."

REFERENCES

(1) HUNT, A. C.: Milk bottles and typhoid fever, Ann. Rep. Bd. of Health, New

Jersey 35: 101; rev. in Exper. Sta. Record 28: 879, 1913.

(2) GIBBS-SMITH, E. G., AND HOBDAY, F.: Milk bottles as a possible cause of epidemics, Vet. J. 84: 503, 1928.

(3) LAYSON, S. V., HUFFER, E. G., AND BRANNON, J. M.: Results of bacteriological survey of milk jugs and milk bottles, Milk Plant Monthly 25: 34, 1936.

(4) Public health service milk ordinance and code, Pub. Health Bull. 220, 1935.

(5) PARFITT, E. A.: Bacteriological standards for milk bottles and cans, Milk Plant Monthly 25, 1936.

(6) HOLMQUIST, C. A.: When are milk containers and equipment clean and sterile? A. P. H. A. Year Book, 1933–1934.

(7) J. A. M. A. 111: 456, 1938.

(8) Advance descriptions of exhibits at dairy industries exhibition, Milk Plant Monthly 25: 112, 1936.

(9) BARTLETT, R. W.: Increasing the efficiency of milk distribution, Am. Prod. Rev. 85: 380, 1938.

(10) DOAN, F. J., AND MYERS, C. H.: Effect of sunlight on some milk and cream products when exposed in paper containers as compared with clear glass bottles, The Milk Dealer Oct., 1936.

(11) TRACY, P. H.: Certain practical aspects of the use of paper milk containers, J. Milk Tech. 1: 40, 1938.

(12) FITZGERALD, F. F.: Development of a fiber container for fluid milk, Food Research 3: 248, 1938.

(13) TANNER, F. W.: Milk containers, dairy ind. 3: 165, 1938; J. Milk Tech. Jan., 1939.

(14) RICE, J. W.: Recent studies of the bacterial content of paper milk containers, Pennsylvania A. Dairy Sanitarians, 1938.

(15) BREED, R. S.: Conference on sanitation of paper milk containers, Milk Sanitarian, 6: 11, 1937.

(16) BREED, R. S.: Second conference on sanitation of paper milk containers, J. Milk Tech., 1: 47, 1938.

(17) PRUCHA, M. J.: Certain sanitary aspects of the use of paper milk containers, J. Milk Tech. 1: 4, 1938.

San Fernando Mission

THE LOS ANGELES MEETING

A Message from the President

For a number of years the American Dietetic Association has been promising itself the pleasure of a meeting in California. Now that the promise is about to become a reality, members will all want to be making plans to travel west. With every type of transportation facility giving us special rates and with the Golden Gate Exposition as an added attraction, who can afford to stay at home? It would seem that there is nothing left out which could possibly add to the 1939 annual meeting—vacation time, a splendid program, location in a part of the country which is new to a great many of us, headquarters in an internationally known hotel, and interesting stop-over points along all routes, to say nothing of the sponsored tour through the Canadian Rockies. The sum of these features makes an unusual convention plan, does it not?

Our California hostesses, too, are sparing no effort to make their hospitality all that anyone could ask for. Let us in turn show our appreciation by taking advantage of the features of this particular year. The California meeting should be outstanding in attendance. We know it will be outstanding in program, location, and entertainment.—ANNA M. TRACY, *President, The American Dietetic Association.*

Greetings and Best Wishes from California

It is practically time to pack your bag, load your camera and "Go West, young woman", for the members on the Pacific Coast are anxiously awaiting your arrival. For the few who may be still undecided, we send a special invitation to come and try our hospitality. Perhaps then, like so many of us, you will succumb to the spell of our enchanted state.

The convention committee members have planned the entire program with your interests in view. The formal sessions will bring many new faces but not all new names; the social gatherings will afford an opportunity to renew old friendships and form new ones, and we assure you that sufficient time has been allowed to see and enjoy the natural beauties of historic California.

Do make your plans now to join us. We would like the opportunity to welcome each of you individually this August in Los Angeles.—HELEN E. WALSH, *President, California Dietetic Association.*

The Program

Never has an annual meeting offered more alluring inducements in the way of entertainments, scenic beauty and gorgeous pageantry, than the Los Angeles meeting. But all this will not overshadow the primary objective of these annual meetings—the formal program.

Present indications forecast an assembly of speakers and subjects fully representative of the outstanding professional achievements gained in the Far Western states. Noted clinicians, investigators in scientific research, experienced administrators and distinguished educators have accepted invitations to speak. Leading dietitians, representing the many diversified fields of work now open to the profession, will have a part in the formal program and in round table discussions.

Further details, including a list of speakers and their subjects will appear in this JOURNAL early in August.—MARY W. NORTHROP, *National Program Chairman.*

On to California!

Little time remains before you must leave on your trip to visit us at the Annual Meeting in Los Angeles. All the Pacific Coast associations are cooperating to make your journey a pleasant one. If you plan to come via the trip arranged by Canadian Railways, you have a special treat in store for you. After leaving Canada, you will have a daylight sail down Puget Sound, through a country which resembles in conformation the fjords of Norway. Through this land of scenic wonders, the first part of your trip will terminate at Seattle. Seattle, built along one side of a natural bowl, has in some ways just grown, like Topsy. Not long ago, while excavations were under way for a new post office, the pile drivers came upon something which baffled their every effort to penetrate. It was discovered that the obstruction was the hull of an old four-masted schooner which had been wrecked during a storm, years ago. The city had gradually grown up about it, and as the ground was filled in, the old schooner was

SAN FERNANDO MISSION

covered and forgotten. I happened to be visiting Seattle at the time the excavating was under way, and I remember particularly the queer hollow sound the pile driver made as it struck and restruck the old hull, and merely bounded back, with no apparent progress. It was found that the old hull had been made of iron wood, and even though many years had elapsed since the ship had been wrecked, it was still sound enough to resist the pressure of the pile driver.

The University of Washington, English Gothic in design, is situated on the shores of Lake Washington, in a setting remarkable for its beauty, and covering many acres. Seattle, itself, a city of beautiful parks, has as its vista, an almost complete circle of snow-capped mountains. Mount Baker, Mount Rainier, Snoqualimie Falls, the Olympic Peninsula, Hood's Canal (a natural canal), Hoquiam, Olympia, Tacoma, all are within a short distance of the city. This year Washington is celebrating the Golden Jubilee of its admission to the Union.

In Oregon, Portland will be visited. Here the Columbia River, famous for its salmon, and the Columbia River Highway, will unfold before you. As you cross the river, you may have an opportunity of seeing the salmon as they swim up-river to spawn.

Your next stop will be San Francisco. Here you will see the new San Francisco-Oakland Bay Bridge and the Golden Gate Bridge. California never does things by halves—one of these bridges would have been enough for an ordinary country, but we had to build two, both marvels of engineering. These, and the Fair have persuaded Californians to overcome their "natural reticence" to tell the world what California, and San Francisco in particular, has to offer visitors. Ample time has been allowed for visiting the Fair. Luncheon is planned for you at the "Inside-Out" at the Yerba Buena Club House, where there will be entertainment during the meal.

Everyone should be urged to bring comfortable walking shoes and a warm topcoat since Bay breezes, even in August, are sometimes quite brisk. The day in San Francisco will include a bus tour of the city, Twin Peaks, Golden Gate Park, Mission Dolores, the Presidio, St. Francis Wood, Sea Cliff, the Marina and Market Street. Also included will be a ride across the Golden Gate Bridge to Marin County with a return trip over the Bay Bridge to Treasure Island. We have already told you something of our plans for you when you reach Los Angeles, so that will not be included here.

We urge each of you to make all necessary plans so that you may be with us in Los Angeles this August.—OCTAVIE DEBEAULIEU, *Chairman, Local Publicity Committee.*

The Pageant of the Pacific

Near the city by the Golden Gate there is a magic city built on the largest man-made island in the world. This city is known as the "Pageant of the Pacific" or "The Golden Gate International Exposition".

The island on which the city rests contains 400 acres constructed of sand pumped out of San Francisco Bay, and 287,000 tons of rock, and is built thirteen feet above the tides. It is over a mile in length and three-fourths of a mile in width. Besides ample room for all exhibits, and a landing field for airplanes, there is space for 12,000 cars in the parking lot.

The island is between two of the largest bridges ever constructed—the San Francisco-Oakland Bay Bridge and the Golden Gate Bridge. The former cost eighty million dollars and the latter thirty-five million. The Golden Gate Bridge contains the longest single span ever erected.

The buildings on the island are unique in their structure. Stylists have achieved a cement stucco that bathes the buildings and tall walls in a radiant glow, sparkling with prismatic colors day and night. It is done with vermiculate, a mica-like substance. It was found that this material applied to wet stucco reflects the light in a million scintillating gems.

At an expense of $1,500,000, a flower show of great interest and beauty has been provided. There are 4000 trees, 70,000 shrubs and millions of flowers. Almost every variety of tree and shrub known to man is found here. There are 45,000 specimens in the Golden Court of Flowers alone. On the western side of the island twenty-five acres are planted entirely in flowers, giving the effect of a gigantic Persian rug.

Three hundred and fifty outstanding American industries exhibit their products by means of display, motion pictures, marionettes and

lectures. Some idea of the magnitude of the displays may be conveyed by the fact that the state of California requires sixteen huge buildings to house her five-million-dollar exhibit, and the medical-dental exhibit covers seven acres. The Hall of Foods and Beverages covers more than two acres. One may see almost every type of foreign village and enjoy music, sports and varied entertainment. On an open air stage 300 feet long "The Cavalcade of the West" is presented three times a day. This shows the history of California under twelve flags. The "Gay Way" contains forty acres of fun.

The illumination engineers, with a budget of a million dollars, have created a "Magic City" in amber, white and pastel shades of shimmering light apparently floating on the waters of the harbor. For the first time a World's Fair is indirectly lighted throughout. Not a single light source is visible to the eye. "Happy Lanterns" sparkle in the trees and "Aladdin's Lamps" glorify the fairyland "Court of the Moon". When the lights are turned on at night, the whole picture as seen from the San Francisco hills is one of a dream city resting in the waters of the bay.

Program for Day in San Francisco

Arrival of Special Tour train 7:53 a.m. Leave hotel 9:00 a.m. on tour of city including Chinatown, Fisherman's Wharf, Golden Gate Park, the Presidio, Twin Peaks, St. Francis Wood, Golden Gate-Marin County. Cost $2.50. Arrive 12:30 p.m. at gate of Treasure Island, admission 50 cents. Luncheon 1:00 p.m. at Yerba Buena Club House. Cost $1.75 plus tax. Afternoon and evening free to visit fair grounds. The Fairmont Hotel will serve as headquarters hotel in San Francisco.—MRS. GWEN WEDLAKE, *Chairman, Day in San Francisco Committee.*

Old Missions of California

Among the historically interesting features of California that will appeal to visitors are its old missions. These were once linked together by the old highway, El Camino Real. Today this highway is practically obliterated and what remains is chiefly in the inaccessible mountain areas where progress and macadam have not crowded it from existence. Its original route is now marked by mission bell signs.

From the first mission at San Diego, San Diego de Alcala, in 1769, to the last one in 1823 at Sonoma, San Francisco Solano, altogether twenty-one missions were founded. Because of their defense value (they were the outer defense, as they promoted docility among the Indians) and because of their economic value, they were encouraged by the Spanish government.

Built during the pastoral period of California's history, many square leagues of land were governed by the missions, and rich harvests of grain, oil and wine, and huge herds of cattle and sheep were under their dominance. The manual labor was performed by the Indians. The organization was a paternal one, the clergy supplying the necessities of life to those who labored.

At San Diego Old Town, the ruins of the first mission can still be seen. Its historical legends have been woven into the romance of Ramona. The second mission along El Camino Real was not begun until 1798. Another, San Luis Rey de France, situated near Oceanside, today is still in a fair state of repair. At the time of secularization this mission was pillaged for the tiles and rafters, and the arches torn apart for the bricks. In 1892, however, it was selected as the seat of a college for training Franciscans, and the buildings have therefore been restored.

The Mission of San Juan Capistrano was founded fairly early, for the year 1776 marked its dedication. On December 8, 1812, an earthquake destroyed the church. But the old ruins are well worth seeing, for no other mission church was so elaborately carved.

Following the old mission road northward, the Mission of San Gabriel Archangel is reached not far from Pasadena. Dedicated in 1771, it is still beautiful and has been kept in repair. The Mission of San Fernando Rey de Espana (1797) is now being rebuilt to its former beauty and within the last few months services have been held within the restored church.

The Mission of Santa Inez (1808) was burned during an Indian uprising in 1824 but has recently been restored. At Los Alamas (The Poplars) the Mission de la Purisima Concepcion, founded in 1787, has since been destroyed by fires. San Luis Obispo de Talosa, near Santa Maria (1769), is still in excellent condition. San Miguel Archangel (1797) today is one of

the most interesting of the missions. The interior, crudely decorated in garish colors by the Indians, has a unique altar ornament of rays radiating from a center which resembles a human eye.

San Antonio de Padua (1771) has been allowed to remain in ruins because it is so remote; likewise, La Soledad Mission (1791) which never got beyond the adobe stage due to water scarcity. In Monterey we find San Carlos Borromeo del Monterey (1770), commonly called the Carmel Mission. Santa Cruz (1791), somewhat off the old highway, was wrecked by an earthquake and tidal wave in 1840. San Juan Baptista (1797), however, is still in a good state of repair.

San Jose de Guadeloupe (1797) and Santa Clara de Assisi (1777) were dedicated to the poorer classes. In 1815, a college was established at Santa Clara. Mission San Francisco de Assisi (Dolores), dating from 1776, today is in excellent repair and has a main altar of exceeding beauty. The Hospital Mission of San Rafael in Marin County was founded in 1870. The most northerly of all the missions is San Francisco Solano (1823).

Of all the missions which can be visited today, the most interesting by far are Carmel, where enough of the original has been preserved to show the grace of outline and artistic carvings; San Fernando, near Los Angeles, now in process of being repaired; San Juan Capistrano; San Gabriel, near Pasadena; and Santa Barbara, which is still in perfect repair.—OCTAVIE DEBEAULIEU.

Further Details Concerning the Meeting

No doubt those who have a long vacation will wish to spend considerable time on the West Coast. In the May issue of this JOURNAL, Octavie deBeaulieu, local chairman of publicity, under the title "Colorful California", mentioned many vacation spots in California. I would like to add a few suggestions to these. This year presents an excellent opportunity to visit Honolulu and Alaska, for these marvelous vacation places are fairly near the West Coast. It is easy to visit Mexico also, and railroad trips can be planned to include this country. Or one could spend some time in *Baja* California at such popular resorts as Ensenada.

If any members plan to remain in the West following the meeting they might be interested in the famous Pendleton (Oregon) Roundup on September 14–16.

For those who wish to devote themselves to more serious pursuits, the courses in home economics under Dr. Agnes Fay Morgan at the University of California and "Refresher Courses" and "Seminars on Research" are being offered. The dates of these are June 26–July 14, and July 17–August 4. For further information members may write to the Dean of the Summer Sessions, 104 California Hall, Berkeley.

For those who are fortunate enough to be in California the first of August, I would suggest that they take the opportunity to see Santa Barbara and the famous "Old Spanish Days Fiesta". It is indeed a colorful spectacle long to be remembered. The Santa Barbara Chamber of Commerce writes concerning the fiesta as follows: "To lilting old-world melodies and the click of castanets, the jingle of silver spurs and the prancing of spirited horses, Santa Barbara will once again celebrate her famous fiesta on August 2–5. Old Spanish customs and old Spanish tunes will be revived in colorful pageants, parades and other joyous entertainment, as the city recaptures the romance of her Spanish past. Reminiscent of early day hospitality, will be the reception on the evening of August 2 at the Old Mission—always a delightful prelude to the festivities. Great flares illuminate the ancient church and the deep-toned bells peal forth as the Franciscans welcome the throngs gathered about the historic grounds. Chants by the noted choir, a well presented pageant-play, fire-works and folk dancing to the accompaniment of a great stringed orchestra are part of the entertainment. 'Nacimiento de Santa Barbara', a great pageant-play, will be performed each evening of the fiesta in the County Bowl. Many of the magnificent parade horses will appear in this pageant, and as they proceed down a moonlit hillside, single file, to gather in the arena before the audience, there will be provided a scene of startling beauty. The sunken gardens of the city's white-walled court-house will serve as a setting for entertainment in the Spanish manner on the afternoon of August 4. At the same hour an exciting rodeo will be in progress at Pershing Park, with cowboys and cowgirls for miles around giving demonstrations of skillful riding and roping."

Thus the California meeting offers much to those attending, both professionally and pleasureably.—KATHARINE BROWN, *Chairman, Local Arrangements.*

Schedule of Trips

Sunday, August 27, 1939

Morning:

Los Angeles Museum in Exposition Park
Places of Worship
San Gabriel Mission—Built in 1799
Our Lady Queen of the Angels—Oldest Church in Los Angeles—Established in 1822

Afternoon: 2:00–5:00

Guests of Home Economics Association at Tea—Miramar Hotel—Santa Monica

Evening:

China City—Oriental Center—Excellent Chinese food
Olvera Street—Real Mexican atmosphere and Food
Griffith Observatory and Planetarium—Theatre of the Heavens—Cost—$.25
Broadcasting Station Tour—Hollywood—Cost—$.40
Grauman's Chinese Theatre—Hollywood

Tuesday Evening, August 29, 1939

Hollywood Bowl—"Symphony Under the Stars"—Cost—$.50
China City
Olvera Street
Broadcasting Station—Hollywood
Griffith Observatory and Planetarium

Theatres:

"The Drunkard"—8:30 p.m.—Cost $1.10—$1.65; Grauman's Chinese Theatre

Night Club Tour—8:00 p.m.—All expense tour—$5.95. Visit three Night Clubs with Supper and Floor Show at the Biltmore Bowl

Thursday Afternoon, August 31, 1939

Tour of Hollywood and Beverly Hills and a Visit to Warner Brother's Motion Picture Studio—1:00–5:00 p.m. with Lunch at Studio Commissary—Rate—$3.50
Huntington Library and Art Gallery
California Institute of Technology
Pasadena—Transportation $1.50
Los Angeles General Hospital

Friday, September 1, 1939

Santa Catalina Island:—A Two-Hour Ocean Voyage with Luncheon at St. Catherine Hotel and a Ride on the Glass Bottom Boat. 8:00 a.m. to 7:30 p.m. Approximate Cost—$6.00
Riverside Mission Inn—Luncheon at the Inn and a Trip through an Orange Packing Plant—9:00 a.m. to 4:00 p.m.
Hollywood and Beverly Hills Tour with Visit to Motion Picture Studio—Leave at 2:00 p.m.—5:00 p.m.—Cost—$2.75
Huntington Library
Broadcasting Station
Los Angeles General Hospital
Hollywood Bowl Concert
Night Club Tour

Saturday, September 2, 1939

A Two-day Trip to San Diego and Old Mexico which will include a Visit to Laguna, Scripps Metabolic Clinic, La Jolla, and Hotel del Coronado. Returning Sunday afternoon. Approximate Cost—$15.00
Santa Barbara—An Optional One or Two-day Trip to Santa Barbara which will include a Visit to the Santa Barbara Mission, Luncheon at the El Paseo, and a Visit to the Sansum Clinic
One-Day Trip—All Expense Tour—Approximately $6.50
Two-Day Trip—All Expense Tour—Approximately $12.50—REEVA HINYAN, *Chairman, Trips Committee.*

What Clothes to Bring

Most Easterners laugh at the Californian's explanation of any unseemly weather conditions as "unusual California weather". While we hope for the best it is difficult to say just what the temperature will be in August. But I am quite safe in predicting that it will be fairly warm in the daytime and cool at night. Rain really will be "unusual" in Southern California at that time. Naturally the weather will influence

the choice of clothes. In order that the information on clothes might be correct, I asked Helene, fashion editor of the Los Angeles *Herald-Express*, to tell us what was best to bring. This is what she submitted: "I suggest the following for comfort and smart appearance. August is usually warm here in Los Angeles, so for general daytime wear I suggest a dark sheer. We expect that brown will be quite smart this fall, so either a brown, navy or black sheer dress or suit will be chic as well as comfortable. For special trips to Catalina, Santa Barbara and San Diego I suggest that visitors bring one gay, bright-colored sports costume. This might be a light colored flannel or crepe skirt with sweater; or perhaps a one-piece shirtmaker sports frock, or a print dress in crepe, acetate or cotton. A *must* along with this is a warm coat, for the wind comes up on the island of Catalina, also at Santa Barbara after three in the afternoon. The banquet requires one dinner dress to be tucked into the visitor's bag. Lace is very good this season and packs well, so this might be a happy choice. A dinner dress with a little jacket is always helpful for a travel wardrobe, being adaptable to informal dinners and more formal affairs. August in San Francisco is quite different from August in Los Angeles. I would suggest a tailored suit or dark crepe dress with very warm coat as a necessity for San Francisco at this time of year. One word about shoes. I am sure no one has to be told that the wrong kind can completely ruin the trip. Included with foot apparel, everyone should be sure to have one pair of well fitting, light weight, *comfortable* shoes."

Mary Northrop sends the following information for those who are taking the Special Tour through Canada and the Northwest. "In the Northwest in late August, ordinary summer clothing or light weight knitted costumes will be comfortable during the day. It cannot be too strongly emphasized that the nights are cold, and a warm coat will be needed in the early morning and the evening".

I do hope that this information will be of value. Late August is a hard time for the wardrobe. The temperature requires cool, light weight clothing for daytime wear but fashion says fall clothes, hence the dark sheers and the spectator type sports clothes will be most practical. I might add here that light-colored clothes and white shoes are seldom seen on the streets in San Francisco even in the summer.—KATHARINE BROWN, *Chairman, Local Arrangements.*

Miscellaneous Information

Members planning to attend the Los Angeles meeting should not postpone writing the Ambassador Hotel for reservations. Those desiring lower rates than offered at the Ambassador may write the hotel, making this fact known. The hotel will send information and will make all arrangements at one of several nearby apartment-hotels.

For those who plan to go on the Special Tour to the Northwest through the Canadian Rockies to Lake Louise, Vancouver, and Victoria, it should be stated that a change has been made in the hotel arrangements in Seattle. The party will reach Seattle the evening of August 22 and reservations for those on the Special Tour will be made at the New Washington Hotel, Seattle, and the Fairmont Hotel, San Francisco.

The headquarters for the "Day in San Francisco" will be the Fairmont Hotel. This hotel has agreed to reserve 25 double rooms at $3.50 per person in the court, or will reserve outside rooms at $4.00 per person. It is necessary for those not going on the Special Tour to make their own hotel reservations well in advance. Mrs. Gwen Wedlake, 2890 California St., San Francisco, is chairman of the "Day in San Francisco" committee, and Elisa Hardman, King County Hospital System, Harborview Hall, Seattle, is chairman in charge of Seattle arrangements.

All those planning to be in San Francisco on August 25 or in Seattle on August 22–23 should notify Dorothy I. Lenfest at 185 N. Wabash Ave., Chicago, so that luncheon and special tour reservations may be made.

Ruth Bowden, Sansum Clinic, Santa Barbara, has been appointed associate chairman of the Hospitality Committee, of which Elsie Jo Nelson, Santa Monica Hospital, is chairman and Essie Elliot and Charlotte Sloan, associate chairmen.

Meal Rates

In planning your convention budget you will want to know the different prices for meals. They are as follows:

Ambassador Hotel, main dining room, à la

carte service, and table d'hôte meals: breakfast $1.00, luncheon, $1.50, dinner, $2.50.

Prices for convention meals will be approximately as listed above, plus tax and service charge.

Table d'hôte prices in the Coffee Shop are: breakfast, 30¢ up, luncheon, 75¢ up, dinner, 85¢ up. À la carte service is also available in the Coffee Shop.

Near the Ambassador are the following: Brown Derby, across the street from the hotel, breakfast, 25¢ up, luncheon, 60¢ up, dinner, $1.00. The Mona Lisa, also across from the hotel, serves luncheons at 60¢ and 75¢ and dinner at $1.00, also à la carte meals; Eaton's Chicken House on Wilshire Boulevard, within walking distance of the hotel, serves chicken dinners at 90¢; Elsie Helen Tea Room, 3500 Wilshire Boulevard, serves luncheons at 40¢ and 50¢ and dinners at 50¢; and The Haig Tea Room, Wilshire and Kenmore, serves dinners at 55¢, 65¢ and 75¢.

Exhibitors at 1939 Annual Meeting, Los Angeles

Aluminum Cooking Utensil Company, New Kensington, Pennsylvania
American Can Company, New York City
Borden Company, New York City
California Fruit Growers Exchange, Los Angeles
Carnation Company, Oconomowoc, Wisconsin
Chicago Dietetic Supply House, Inc., Chicago
Colson Corporation, Elyria, Ohio
Cream of Wheat Corporation, Minneapolis
F. A. Davis Company, Philadelphia, Pennsylvania
R. B. Davis Company, Hoboken, New Jersey
Dohrmann Hotel Supply Company, San Francisco
Edison General Electric Appliance Company, Inc., Chicago
Evaporated Milk Association, Chicago
J. B. Ford Company, Wyandotte, Michigan
Frosted Foods Corporation, New York City
General Foods Corporation, New York City
Gerber Products Company, Fremont, Michigan
Hawaiian Pineapple Company, Ltd., San Francisco
H. J. Heinz Company, Pittsburgh
Hilker and Bletsch Company, Cincinnati
Horlicks Malted Milk Corporation, Racine, Wisconsin
J. B. Lippincott Company, Philadelphia
Kellogg Company, Battle Creek, Michigan
Knox Gelatine Company, Johnstown, New York
Kraft-Phenix Cheese Corporation, Chicago
Libby, McNeill & Libby, Chicago
The Macmillan Company, New York City
National Biscuit Company, New York City
National Canners Association, Washington, D. C.
National Dairy Council, Chicago
Pet Milk Company, St. Louis
Ralston Purina Company, St. Louis
Ad. Seidel & Son, Chicago
John Sexton & Company, Chicago
J. W. Stacey, Inc., San Francisco
Standard Brands, Inc., New York City
Turco Products, Inc., Los Angeles
Wisconsin Alumni Research Foundation, Madison, Wisconsin

EDITORIAL

Community Nutrition Service in Relation to Relief Allowances[1]

Community nutritionists or home economists are turned to by social agencies to set up standards for determining individual family needs. These standards should provide those fundamental needs which are essential for the preservation and maintenance of normal living and good health.

A relief grant should be based upon the sum of the costs of the various family requirements and upon the relief agency's available funds.

Schedules for estimating family needs are set up for items such as food, shelter, fuel, light, clothing, household supplies, health expenses, and personal incidentals. In preparing these cost schedules, the nutritionist bases them on scientific information where possible and upon studies of consumption where scientific information is not available. For example, food estimates are based on scientific knowledge of food requirements, while clothing estimates are determined by consideration of what is sufficient for health, for maintenance of standards of cleanliness, and for the desirable psychological effect in maintaining self-respect.

Relief grants may be given in two different forms:

1. Relief in kind; as actual articles, such as bags of food and articles of clothing. A form of relief in kind is the food order which is drawn on a particular store and which permits freedom of food choice within certain limits.
2. Cash relief. This form enables a family to maintain its ability to manage its own affairs; and leaves the family free to develop its ability to plan and buy wisely.

In calculating relief food allowances selection is made from those foods which furnish the most nutritive value at the lowest cost. These foods include milk, low priced vegetables and fruit, eggs, meat and fish, cereals and bread (part of these whole grain products), butter, the cheaper cooking fats, and sugar and molasses. The quantities for normal individuals are based upon age, sex and activity. Because the food allowances are based upon average costs of groups of foods, families can use considerable freedom of choice and still manage to have adequate diets. The Italians may have dandelion greens, turnip tops, broccoli, and escarole. The Poles may have carrots, turnips, parsnips, and cabbage.

Studies show that the average family on a relief food allowance or the average family with a low income does not have an optimum family diet or even a satisfactory diet. The average low income family in every section of the United States consumes too little milk, too few eggs, and not enough vegetables and fruit. In other words, there is extensive need for helping low income families to learn how to plan the use of their food money to provide sufficient nutritive qualities.

The dispensing of all food relief in kind is not a solution to this educational

[1] Based on paper by Frances Marriott Coles, nutritionist, Council of Social Agencies of New Haven, presented before the Connecticut Dietetic Association, New Haven, April 27, 1939.

need. One immediately meets with certain human reactions which detract from the educational process. An extreme example of this was the plan in one city where families were given a canned stew (containing good quality and wholesome foods) which scientifically supplied all the essential nutrients for one meal. One can contained enough food for a family of five. But the clients responded with the complaint that they were being "treated like dogs." The food experts arranged a luncheon for the relief directors and after a meal of the complete food, everyone dropped the matter and distribution was stopped. Unquestionably, "Experience is a great teacher."

Where federal surplus commodities complement cash relief, the educational value in learning to use desirable foods is not being lost because the families have money to use for their own preferences and the commodities are not forced upon them. From observation these commodities have been of good quality. For example, the following have been distributed: evaporated milk, dried beans, oranges, grapefruit, Graham flour, whole wheat cereal, raisins, dried peaches, cornmeal, and butter. Recipes for some of the foods help families to use them to advantage. While most of the foods are generally considered common food articles, there are people who are not familiar with all of them. One man said, in referring to grapefruit, "How do you serve those things? My wife boiled them and baked them and we didn't like them either way."

With regard to the practice of giving relief in kind, this sometimes implies that no one who is on relief should or can plan his own affairs. As one must realize, this is not generally true. The C. family is an example. For several years Mr. C. has worked and provided for his family in the summer for he found ready employment in shore diners. In the winter he has been able to find only occasional jobs and the family has been in need of some supplementary relief. There are five children between the ages of 7 and 18 years. Several years ago Mr. C. was working steadily in a factory earning thirty dollars a week. At a time when he was employed, Mrs. C. attended a food class conducted in a community house. The food class met for eight lessons on the preparation of low cost foods. At the final meeting each woman brought in a week's menu which she had planned for her family. Mrs. C. had prepared the most original and economical. In discussing hers, it was revealed that she was accustomed to shopping at a number of different places where she obtained many real bargains. When this family needs relief, should they be given articles of food chosen by someone else?

Social case workers appreciate the nutritionist's help in setting up individual family budgets which help families to live within their means. Also, case workers welcome this kind of help in determining real needs because persons with emotional conflicts may be projecting their wants on material things. The case worker is the person best equipped to meet such emotional conflicts. The case worker does understand that the recipient of relief must be taught to provide for health needs and to live satisfactorily on a relief budget. The case worker turns to the nutritionist to enrich her appreciation of this difficult task, and to increase her

own knowledge and ingenuity in educating the client.

Ice Cream[1]

The popularity of ice cream in this country is due largely to flavor, attractive appearance, availability and convenience. Commercially frozen desserts today are recognized as being not only highly nutritious, but palatable and bacteriologically safe. The quality has been very decidedly improved during the last ten years due to improvement in manufacturing methods and equipment. The personnel of the modern ice cream plant is comprised of men who have a complete understanding of every detail involved in the manufacture of quality ice cream. Many are graduates of state universities, having specialized in dairy manufactures which requires thorough knowledge of all phases of ice cream making. A most important duty is to see that every product used in the ice cream mixture is efficiently pasteurized at a temperature of 150 degrees. Improved processes of mixing, pasteurizing, homogenizing, cooling, aging, freezing and hardening, under careful supervision, constitute modern manufacturing of ice cream.

In addition, state departments of agriculture employ corps of trained men who make routine and exacting inspection of all ice cream plants, and state boards of health employ trained men located in different parts of the state whose duty it is to inspect sanitary conditions in every drug store, confectionery and restaurant where ice cream is sold.

[1] Based on a paper by Professor W. H. E. Reid, Dairy Department, University of Missouri, presented before the Missouri Dietetic Association, Kansas City, May 15, 1937.

In view of the great care in manufacture and inspection, it is surprising that ice cream manufacturers, distributors and consumers have given the important matter of the correct serving temperature so little attention. The actual temperature at the time of serving has a direct effect upon the flavor, body and texture of the ice cream. Three surveys made during the past three years indicate decided lack of familiarity with correct serving temperatures on the part of the manufacturer, steward, service man and dealer. Temperature readings were obtained for several thousand samples of ice cream, sherbets and ices in drug stores, cafes, confectioneries and hotels. The surveys indicated that the temperature of the different ice creams when served to the consumer varied as follows: vanilla ice cream, 2 to 22°F.; chocolate ice cream, 4 to 18°F.; strawberry ice cream, 2 to 12°F.; orange sherbet, 6 to 13°F.; and miscellaneous flavored ice creams, 2 to 22°F.

The most desirable eating qualities from the standpoint of flavor, body and texture, result when the product is served at a temperature of 12 to 14°F. The body of the ice creams at these temperatures was usually described as being smooth, mellow, medium resistant to resistant, and the texture as uniform, medium close to close. There was, of course, some variation in the different ice creams depending upon the fat and solids content; type of freezer used and the care subsequent to removing from the hardening room and placing in the cabinet or fountain of the retail distributor. The ease of dipping was improved and the shrinkage that usually accompanies the dipping process was

markedly decreased as the temperature of the various ice creams was raised.

The manufacturer and the retailer are in a position to enhance the consumer acceptance of ice creams, merely by seeing that a product uniform in flavor, body, and texture is served at a temperature pleasing to the consumer.

CURRENT COMMENT

The Significance of an Ultimate Aim in a Professional Education Program

A profession, it may be said, is a vocation in which persons are engaged in the practice of an art that is founded on a science and is altruistic in application.

Since the time when theology, law, and medicine were specifically known as the professions, "new professions have come into existence and the old professions are more esteemed."[1] New vocations have also come into being as the applications of science and learning have continued to open more specialized fields of endeavor. Among these new vocations are some of potential professional quality. The initial progress of these vocations toward the professional level is through the development of an organization with its requirements for membership, an education program, publications, and so on. Whether or not they eventually achieve a level of development commensurate with their potential capacities, however, depends partly upon the extent to which they, at some time, interpret and apply to themselves the characteristics inherent in the old professions.

No medium has been more vital in the perpetuation and advancement of professions than have their education programs. Consideration is, therefore, here given to certain qualities inherent in professional education. Since inherent qualities may not be considered apart from their origin, nor as isolated characteristics, understanding of them requires a somewhat philosophical approach.

Behind each professional education program is the profession itself, and behind the profession its reason for being, which has profoundly influenced that program and, therefore, the conception of professional education. To find its reason for being is to go beneath all superficial manifestations to a desire to serve others—in fact, to a direct ameliorative response to some human need. As the means through which such service might be rendered became elaborated and more clearly differentiated, professions developed. The same altruistic desire, which prompted the service, prompted also efforts to teach—in order that the service might be perpetuated and that others might continue to serve humanity through it. To pass on "by precept, lecture, and every mode of instruction . . . a knowledge of the art"[2] has, through many centuries, been regarded as an obligation and acknowledged as a responsibility parallel with that of rendering the service itself. Thus accumulated knowledge has been preserved and used for the benefit of succeeding generations, and thus have the altruistic ideas of the professions been transmitted.

[1] Besant, Walter: Fifty Years Ago, p. 262. New York: Harper Bros., 1888.

[2] The Hippocratic Oath.

In their beginnings the old professions had no organization, no teaching other than individual instruction, nor even any science in the sense that we know it, but they did have, inevitably, the motivation of an inherent altruism.

Gradually, as professional services developed their technics, their methods of control and advancement, their education programs became organized and expanded until, today, professional education implies a post-academic period of specialized study and training. Gradually, also, as participation in educational and social programs became more widespread, the interpretations of altruism broadened. But the altruistic attitude, which seeks primarily not tangible rewards, but the rendering of service for the good of others, has remained a quality inherent in the ideal conception of any profession and, therefore, of any professional education program.

Altruistic ideas and an altruistic attitude become articulate in a philosophy. Thus, from the beginning, a philosophy was inherent in professional teaching and, as time went on, a philosophy became integrated in the various professional education programs. Although its influence has been more pronounced during certain periods of development than others, it has, with the progress that has lead to modern education, come to be increasingly significant. For the more highly developed professional services have become and the more intricate and specialized the demands for the preparation of students, the more the altruistic attitude is exemplified in a professional education program through a functioning philosophy. Transmission to students of this attitude, as an ideal, emanates from an understanding interpretation of that philosophy throughout the teaching program.

In the philosophy underlying professional education the meaning of the word "education" has, in itself, important implications. It is a "process of growth."[3] Educational advances have grown out of such ideas as are conceived in the derivation of the term education, as, for example, the "leading out" of the individual's capacities. Education is concerned not so much with the impact of facts and theories upon the individual, as with the drawing out of the individual's capacities through them. Specifically, "professional" education is to the end that the student may use facts and theories cumulatively to some advantage other than his own.

The philosophy underlying professional education is, therefore, appropriately summed up in its aim which is, in principle, the development of students for the highest grade of professional activity of which each is inherently capable. The discernment with which factors influencing the effective execution of a program are correlated, according to their relative importance, with currently adequate educational requirements, determines the extent to which this aim is approached. It is an ultimate aim, an ideal of accomplishment, toward which professional education programs strive through an unending process.

That which is a heritage to the old professions may be acquired and assimilated through conscious effort.

In a recent paper the development of

[3] Haggerty, Melvin E.: The Evaluation of Higher Institutions, p. 289. (The Education Program, Vol. III). University of Chicago Press, 1937.

students' judgment was proposed as the ultimate aim of the hospital training courses and a suggestion of the underlying philosophy was given.[4] May not the ultimate aim of the education program of the American Dietetic Association, through which it may progress increasingly toward identification with professional education programs in general, be the development of judgment?

"Judgment is the highest quality. By attention and intelligence we may gather data, but judgment coins them into conclusions for the intellectual commerce of the world."[5]—FLORENCE E. BATESON, *2038 Cornell Road, Cleveland.*

FOOD CONSUMPTION OF ONE HUNDRED FOUR FAMILIES IN MANILA

In the *Philippine Journal of Science*, August 1938, Gutierrez and Santos of the School of Hygiene and Public Health, University of the Philippines, report a food consumption study of workingmen's families selected from a district where the university maintains an urban health demonstration unit.

The changing world-wide concept of the importance of nutrition to health is expressed in challenging terms in the authors' opening paragraph: "The ill health occasioned by malnutrition is of as much importance to public health as the ill health caused by microbic and parasitic disease. A poor diet may bring in its wake not only the well known deficiency diseases, but also certain diseases associated with specific organism such as tuberculosis and pneumonia. Moreover, there is a growing tendency at present to ascribe much previously mysterious sickness and debility to dietary deficiency."

Previous dietary studies in the Philippines had been made of rural families in selected provinces and of urban groups in children's institutions, college dormitories and prisons. The present study was the first of urban families who had complete selection of their food.

Methods Used. The plan adopted was the so-called inventory system or food records for each family. Each record included the as purchased weight and cost of food materials consumed in the three principal meals of one family for one day, and data on the age, sex, literacy, occupation and income of the members of the household.

In analyzing the nutritive values five factors were considered: total energy, grams of protein, fat, carbohydrate and total ash. These factors were evaluated for each food by the item-by-item method, using food tables on the composition of native foods prepared by Santos and Adriano (1929), Santos (1931), Hermano (1932) and Adriano (1932).

No attempt was made to evaluate in detail the vitamin content of the diets as quantitative data on Philippine foods for these essentials have not been determined. Special study was made only of the vitamin B_1 content as this is generally deficient in the Filipino diet. The Cowgill formula for the vitamin B_1 requirement of man was applied to the diets and his index of B_1 food values used in calculating the content of the foods eaten.

Summary Findings and Nutritive Values of the Diets:

1. Food consumption of 104 families of workingmen in Paco District, Ma-

[4] Bateson, Florence E.: What should be the ultimate aim of the hospital training courses? J. Am. Dietet. A., 14: 528–533, August–September, 1938.

[5] Minot, Charles S.: Certain ideals of medical education, J. A. M. A. 53: 504, August 14, 1909.

nila, was studied from October 1936 to March 1937. The families averaged six members each, the smallest being two and the largest, twelve. The average daily income for one family was found to be 1.83 pesos (50 cents in United States currency). A large majority (67 per cent) owned their houses. Illiteracy was 6 per cent (38 out of 666). Adult males above 14 years of age averaged 53 kilos in weight.

2. The commonest foods eaten, besides rice and bread, were *bangos*, shrimps and *dalagang bukid* among sea-foods, and bananas, tamarind, tomatoes and onions. *Purico*, a vegetable fat manufactured from cocoanut oil, was extensively used in cooking. Coffee was a very common beverage.
3. The average daily intake per man unit was found to be 2107 calories, 63 gm. protein, 33 gm. fat, 377 gm. carbohydrate and 11 gm. minerals. Protein furnished 12 per cent of the total calories; 45 per cent was derived from animal sources, chiefly fish, and only 38 per cent from rice. Approximately 88 per cent of the total calories was obtained from carbohydrate. The most variable factor in the diet was fat; the least variable, carbohydrate and total energy value.
4. The vitamin B_1 intake was probably at a minimum without sufficient margin of safety as measured by Cowgill's formula.
5. Comparison with food consumption of rural families showed that the Paco district diets furnished less energy, carbohydrate and minerals, but more fat and better quality protein. The rural families consumed more rice, but less meat, fish, eggs, milk and dairy products, sweet and fatty foods. On the whole the urban families were better fed than the rural families.
6. The average daily consumption of sugar was 18 gm. per capita in the Paco district. This was a higher intake than for most of the rural families studied.
7. The food cost per adult male averaged 17 centavos. Very little money was spent for milk and dairy products (2.6 per cent) while a fairly constant level was shown for sweet and fatty foods (9.9 per cent) at the different levels of food costs. The proportion of money spent for cereals decreased at the higher cost levels while that spent for meat, fish, eggs, fruits and vegetables increased. About 40.7 per cent of the total food money was spent for meat, fish and eggs, 32.5 per cent for cereals and 14.3 per cent for fruits and vegetables.
8. A study of the weight of food in the total income showed that the proportion spent for food is definitely related to differences of family income. Approximately 80 per cent of the families spent about 50 per cent of their income for food. Families on higher income levels had superior diets.
9. A study of food consumption for two families in this group for an entire month showed such a close relationship between income, food costs and nutritive values of their diets and those of the other families studied for only one day that the authors felt justified in taking the results of a day's diet of the family as more or less representative.

Compared with Sherman's and Rose's suggestion for an economical application of our present knowledge of food values, the allocation of money spent for different types of food in these studies varies greatly. Sherman suggests that as much be spent for milk and cheese and also for fruits and vegetables as for

meat, poultry and fish. The Manila investigators comment on the wide deviation from the Sherman standards in their report and add that the differences in price level and availability of milk and dairy products in the Philippines are such that the Sherman standards are not applicable.

The recent report (1939) on *Diets of Families of Employed Wage Earners and Clerical Workers in Cities* by Stiebeling and Phipard shows that 25 to 40 per cent of the income of 4000 American families studied was spent for food. Food consumption also varied greatly according to geographical location and income. The white families included in the study spent from 25 to 33 per cent of their food money for eggs, lean meat, poultry and fish; 20 to 25 per cent for fruits and vegetables and only 12 to 16 per cent for milk and cheese. Negro families spent almost one-third for eggs, meats, poultry and fish and about one-sixth for vegetables and fruits and 6 per cent for milk. These recent figures on food consumption in the United States show tendencies in food distribution costs similar to the Philippine study.—ANNA DEPLANTER BOWES, *Philadelphia Child Health Society.*

A QUANTITATIVE ANALYSIS OF THE BUTTER FAT AND MOISTURE CONTENT OF CERTAIN CHEESES[1]

In this study the following varieties of cheeses were analyzed for moisture and fat content:

(1) Processed cheese, 4 brands each of Swiss and Cheddar in 5-pound packages.

(2) Four brands of processed cheese products in 8-ounce packages.

(3) Two brands of cream cheese in 3-ounce packages.

(4) Four brands of cream loaf in 3-pound packages, 4 brands of pimiento-cream in 3-pound packages, and 3 brands of relish-cream in 3-pound packages.

The samples of the processed cheeses and the cream loaves were obtained from the wholesale distributors; those of the processed cheese products and cream cheese were obtained in local retail stores. Samples were taken from 3 or more shipments in order to compare results with the same brands, and also for different brands. Two or more determinations of moisture and fat were made of the samples as soon as possible after they were received, the time varying from one to three hours. Each sample was well mixed before aliquot portions were removed for testing. Two or more determinations of moisture and fat were made on each sample.

The Leach[2] evaporation method was used to determine the moisture content. Five gram samples were dried in a water oven until constant weight was obtained.

Lythgoe's[2] Modified Babcock method was used to determine the fat content. Six gram samples were weighed and then transferred to a Babcock cream bottle with the aid of water and 17.6 cc. sulfuric acid, specific gravity 1.84. The mixture was rotated in a centrifuge until the fat came to the top of the graduated bottle. The percentage of fat in the sample was then determined.

The mean is the arithmetic mean and is the sum of the percentages in the series divided by the number of samples in

[1] Abridgement of a thesis presented to the faculty of the University of Chicago, December, 1936, in partial fulfilment for the Master of Arts degree.

[2] Leach, Albert E.: Food Inspection and Analysis, 4th rev. ed. New York: John Wiley & Sons, 1920.

the series. The average deviation of the samples from each manufacturer was calculated from the mean of these samples; whereas the average deviation of all samples was calculated from the mean of all the samples for that particular kind of cheese.[3]

Each manufacturer is identified in the tables by a letter rather than by name or brand of the product. For example, the letter "D" in all the tables indicates samples obtained from the same manufacturer.

Tables 1 and 2 summarize the moisture and fat content of the cheeses as found in this study and also the percentages of moisture and fat as reported by the United States Department of Agriculture[4] for Swiss and Cheddar cheeses.

TABLE 1

Moisture and Fat Content of Processed Cheese, Cheese Products, and Certain Cured Cheeses

CHEESE	NO.	MOISTURE			FAT		
		Per cent	Range	Aver. dev.	Per cent	Range	Aver. dev.
Swiss							
D	4	37.03	3.19	0.95	28.73	1.93	0.68
E	4	38.02	3.46	0.88	30.08	7.07	2.60
F	3	35.24	3.26	0.89	29.68	0.67	0.18
H	3	38.52	2.12	0.79	29.56	1.34	0.42
All samples	14	37.36	5.84	1.21	29.03	7.07	1.20
Cheddar							
D	3	34.75	2.50	0.80	33.75	0.93	0.36
E	4	36.13	2.09	0.52	32.22	0.71	0.27
F	3	36.62	1.12	0.41	32.77	2.14	0.51
H	3	39.01	2.39	0.54	32.58	0.51	0.28
I	3	36.29	2.24	1.21	30.24	2.64	0.88
All samples	16	37.46	7.10	1.51	32.32	5.42	0.90
Products							
D	3	40.76	1.60	0.43	27.01	2.75	0.98
E	3	33.99	7.34	2.26	27.40	2.44	0.78
F	3	38.63	5.42	1.39	33.22	0.87	0.31
I	3	38.66	5.78	1.96	24.97	1.11	0.25
Cured*							
Swiss	3	34.28	1.00		32.60	2.38	
Cheddar	156	36.84	11.20		33.83	6.79	

* C. F. Doane, H. W. Lawson, and K. J. Matheson: Varieties of Cheese: Descriptions and Analyses, Bull. No. 608, 2nd. rev. ed., p. 53, U. S. Dept. Agric., 1932.

[3] Thurstone, L. L.: The Fundamentals of Statistics, New York: The Macmillan Co., 1925.

[4] Doane, C. F., Lawson, H. W., and Matheson, K. J.: Varieties of Cheese: Descriptions and Analyses, Bull. 608, U. S. Dept. Agric. 1932.

The average amount of moisture in 14 samples of processed Swiss cheese is 37.36 per cent with an average deviation of 1.21 per cent; and the average amount of fat in the same samples is 29.03 per cent, with an average deviation of 1.20 per cent. The average amount of moisture in 16 samples of processed Cheddar cheese is 37.46 per cent with an average deviation of 1.51 per cent; the average amount of fat in the same samples is 32.32 per cent with an average deviation of 0.09 per cent. There is a slightly higher percentage of moisture and a slightly lower percentage of fat in processed than in cured cheese of the same kind. However, the range in the variation either between the different brands, or between samples of the same brand, is less in processed than in cured cheeses. This shows that manufacturing processes are closely controlled. It also indicates that one may buy processed cheeses on a competitive basis and be assured of getting practically the same food value from different manufacturers, or from the same manufacturer at different times. This stability of the

TABLE 2

Moisture and Fat Content of Cream Cheese, Cream Loaf, and Elaborated Cream Loaf

CHEESE	NO.	MOISTURE			FAT		
		Per cent	Range	Aver. dev.	Per cent	Range	Aver. dev.
Cream							
D	3	46.95	3.80	1.37	44.53	5.11	1.40
E	3	48.86	1.69	0.48	41.67	2.57	0.57
All samples	6	47.96	5.65	0.85	43.10	6.18	1.78
Loaf							
D	3	51.79	4.64	1.21	38.93	1.01	0.53
E	3	57.45	12.18	4.36	34.59	11.05	3.85
F	3	54.65	1.19	0.32	35.83	1.40	0.44
G	3	52.12	1.94	0.51	40.75	1.78	0.56
All samples	12	52.24	14.87	1.53	37.58	13.22	2.51
Pimiento							
D	4	58.96	2.62	0.60	31.58	6.54	2.49
E	3	59.87	5.01	1.86	32.52	3.53	1.26
F	4	57.80	2.91	0.87	30.98	2.76	0.72
G	3	59.02	0.34	0.17	28.65	3.02	1.04
All samples	14	58.77	4.99	1.15	30.98	7.69	1.75
Relish							
E	3	53.62	2.93	1.10	32.99	4.08	1.13
F	3	54.48	1.59	0.51	30.45	2.83	0.79
G	3	58.85	1.88	0.74	25.22	1.72	0.51
All samples	9	55.62	7.60	2.13	29.54	10.70	2.95

product is significant in the calculation of diets as it means a uniform moisture and fat content. The difference in food value between processed and cured cheeses is insignificant, except in very carefully controlled dietary experiments.

The average amount of moisture in 4 brands of processed cheese products, respectively, is 40.76, 33.99, 38.63, and 38.66 per cent. The average amount of fat in the same brands, respectively, is 27.01, 27.40, 33.22, and 24.97 per cent. There is a large range in the percentage of both moisture and fat between the different brands indicating that they could not be used interchangeably in the diet and obtain equal food value; neither could processed cheese products be used interchangeably with cured cheese as they are slightly higher in moisture and lower in fat.

The average amount of moisture in 6 samples of cream cheese is 47.96 per cent with an average deviation of 0.85 per cent; and the average amount of fat in the same samples is 43.10 per cent, with an average deviation of 1.78 per cent. There is a wide range in both moisture and fat content between the various samples.

The average amount of moisture in 12 samples of cream loaf is 52.24 per cent, with an average deviation of 1.53 per cent. The average amount of fat in the same samples is 37.58 per cent, with an average deviation of 2.51 per cent. There is a wide range in the amount of fat in samples from the same manufacturer as well as from different manufacturers.

In comparing the total amount of moisture and fat in cream cheese and cream loaf, we find that the difference is in the expected direction, that is, more moisture and less fat in the 3-pound package of cream loaf than in the 3-ounce package of cream cheese. The range in the amount of moisture and fat is relatively high for both cream cheese and cream loaf, the range being considerably higher in cream cheese. Since this range is high, when accurate calculations are necessary in planning the diet frequent analyses should be made of the cream cheese or cream loaf purchased. For most purposes the differences in food value are not significant, and cream cheese and cream loaf could be purchased on the basis of flavor, price, or availability.

The amount of moisture in 14 samples of cream loaf combined with pimiento is 58.77 per cent, with an average deviation of 1.15 per cent. The average amount of fat in the same samples is 30.98 per cent, with an average deviation of 1.75 per cent. The average amount of moisture in 9 samples of cream loaf combined with relish is 55.62 per cent with an average deviation of 2.13 per cent. The average amount of fat in the same samples is 29.54 per cent with an average deviation of 2.95 per cent. The results of this experiment indicate that the amount of moisture is higher and the fat lower in cream loaf when combined with either pimiento or relish. Thus elaborated cream loaves have a lower food value than plain cream loaves.

In general, this experiment shows that there is no appreciable difference in moisture and fat content between cured and processed Swiss and Cheddar cheeses. Neither is there a conspicuous difference in cream cheese and cream loaf. Thus cheeses of the same type as those analyzed in this experiment

could be used interchangeably in institutional diets, except under experimental conditions.—MARY MERLE BUCKLES, *St. Joseph Hospital, Kansas City.*

THE "TENDERAY" PROCESS

At a dinner given at the Hotel Statler in Cleveland on April 12 by Mr. Albert H. Morrill, president of the Kroger Grocery and Baking Company, the opening of the first beef tenderization plant was celebrated. The dinner climaxed a day in which the plant where "tenderay beef" is now for the first time offered for commercial distribution, was open for inspection. At present the Cleveland plant is handling chiefly Ohio beef and distribution is therefore confined largely to this area.

The new "tenderay process" for aging beef is the result of several years of research conducted at the Mellon Institute by Dr. M. D. Coulter under a fellowship of the Kroger Food Foundation, and collaboration with the Westinghouse Electric and Manufacturing Company through the work of Dr. H. C. Rentschler.

The theory upon which this research was based was that the tenderness resulting from a number of weeks of "aging" was due to enzyme action. Through the new "aging" process the same tenderness is obtained, under scientifically controlled conditions, in from two to four days.

The dressed beef is hung in an aging room where a temperature of 60°F. and a relative humidity of 85 to 90 per cent are maintained. At this temperature enzyme action is very much accelerated. The high humidity prevents evaporation which in the older method (including subsequent losses in trimming) resulted in as much as 40 per cent loss in weight. Growth of mold and bacteria are prevented by use of the "sterilamp"—with an ultraviolet radiation of sufficient potency to kill both surface and air-suspended bacteria. In from two to four days the aging process is completed. The beef is then removed to a chill room where it is reduced to holding temperature and then held at 32° to 36°F. while awaiting distribution.

The steaks served at the dinner, presumably samples of what could be expected at the retail counters, were delicious. Because of the saving in time and in shrinkage, it is anticipated that "tenderay" beef may be offered to the consumer without appreciable change in price.

A study of the nutritional aspects of this new process is now under way.—FLORENCE E. BATESON, *2038 Cornell Road, Cleveland.*

REPORT OF THE NOMINATING COMMITTEE, 1938–1939

A long time ago William Penn wrote, "Five things are requisite for a good officer; ability, clean hands, dispatch, patience, and impartiality." I cannot improve on these requirements except to point out that the American Dietetic Association Nominating Committee strives also for a good geographical representation in the selection of officers. Sometimes it is difficult to convince persons that their abilities are needed for the efficient operation of our Association, and those approached seem to spend much time in serious contemplation similar to Hamlet's "to be or not to be" mood, while deciding whether or not to

accept the nomination. However, these same persons finally accept and if elected, do the work to the best of their ability, thereby justifying our faith and confidence in them.

The House of Delegates had previously recommended that the Nominating Committee prepare a single slate for the office of president-elect and a double slate for the offices of vice-president and treasurer. According to the Constitution, eight members were to be chosen for the Nominating Committee. To select the officers of the Association, the following procedure was set up:

1. A letter (previously approved by the president and members of the Nominating Committee) was sent to members of the Executive Board, House of Delegates, past presidents, and presidents of affiliated and non-affiliated state associations.
2. A summary of the replies was made and sent to members of the Nominating Committee who made up a tentative slate.
3. The slate was voted on and the nominees approached for permission to include their names in the capacity for which they had been selected.[1]

[1] According to Article V, Section 6 of the Constitution, "Other nominations may be made by nomination petitions signed by not less than one hundred members of the Association, of whom not more than ten shall be from any one state, assented to in writing by the person or persons named thereon as nominees, and filed with the Secretary at the office of the Association on or before the fifteenth day of August. After the fifteenth day of August an official ballot shall be prepared by the Secretary. In the event that any nominations are made by such petitions the words 'committee nominee' shall follow the name, place of residence, and professional designation of any candidate proposed by the Nominating Committee, and the words 'nomination petition' shall follow the name, place of residence, and professional designation of any candidate nominated by not less than one hundred members as hereinbefore provided."

The slate the Nominating Committee presents for 1939–1940 is as follows: President-Elect, Mary I. Barber; Vice-President, Katharine Brown and Selma Streit; Treasurer, Margaret Cowden and Millie Kalsem. The Nominating Committee candidates are as follows: Nell Clausen, Wisconsin; Lenna F. Cooper, New York; Fern Gleiser, Iowa; Gertrude McDonald, Massachusetts; Peggy Newsom, Georgia; Jennie Rowntree, Washington; Mary Smith, Texas; Adeline Wood, New York.—LUTE TROUTT, *Chairman*; RUTH BOWDEN, VIRGINIA RAY, MARIE HINES and JENNIE TILT.

AMERICAN DIETETIC ASSOCIATION NOMINEES 1939–1940

For President-Elect: Mary I. Barber, B.S., Teachers College, Columbia University. Graduate study: Teachers College, Columbia University. Positions held: teacher of Foods and Cookery, Teachers College, Columbia University; demonstration work, Mayor Mitchell's Food Aid Committee, New York City; lecture demonstration for New York Bureau of Conservation; dietitian, Markleton Sanatorium; teacher, Home Economics, Philadelphia Public Schools. Present position: director of Home Economics Department, Kellogg Company, Battle Creek, Michigan. Publications: editor of *Child Life* Pantry Section and of numerous articles in many magazines and journals. Professional activities: (a) American Dietetic Association, second vice-president, chairman, Community Education

Section, member, Finance Committee; (b) Michigan Dietetic Association, vice president; (c) Michigan Home Economics Association, president; (d) member, Business and Professional Women's Club, Altrusa Club, American Association of University Women; (e) Women's Advertising Club, Grand Rapids, Michigan, honorary member. Present office: American Home Economics Association, vice-president.

For Vice-President: Katharine Brown, B.S., University of Washington. Graduate study: Approved Training Course for Student Dietitians, California Hospital, Los Angeles. Positions held: nutritionist, Los Angeles County Health Department and Los Angeles County Tuberculosis Association. Present position: consultant dietitian, The Moore-White Clinic, Los Angeles. Publications: co-author of article in *California and Western Medicine*, April, 1935. Professional activities: (a) Los Angeles Section, California Dietetic Association, secretary-treasurer; (b) California Dietetic Association, vice-president, president, editor of *Bulletin*, chairman, Diet Therapy Committee. Present office: American Dietetic Association, chairman, Local Arrangements Committee.

For Vice-President: Selma Streit, B.A., University of Texas. Graduate study: University of California, Columbia University, and University of Texas. Positions held: Home Economics teacher; manager, High School Lunch Room; chief dietitian, Bethesda Hospital, Cincinnati; instructor, Institutional Management, University of Texas; dietitian and business director, Scottish Rite Dormitory, Austin, Texas; instructor, Institutional Management, Teachers College, Columbia University. Present position: business director, Scottish Rite Dormitory, Austin, Texas. Publications: magazine articles. Professional activities: (a) American Dietetic Association, member Placement Bureau Board; (b) Texas State Dietetic Association, president; (c) American Home Economics Association. Present office: (a) American Dietetic Association, member, Placement Bureau Board; (b) Texas State Dietetic Association, president.

For Treasurer: Margaret Cowden, B.S., University of Nebraska. Graduate study: Approved Training Course for Student Dietitians, Michael Reese Hospital. Positions held: dietitian, Michael Reese Hospital; head dietitian, Children's Hospital, Pittsburgh; therapeutic dietitian, Vanderbilt University Hospital, Nashville, Tennessee; chief dietitian, Children's Memorial Hospital, Chicago. Present position: director of dietetics, Michael Reese Hospital. Professional activities: (a) Chicago Dietetic Association, vice-president, president; (b) Illinois Dietetic Association, business manager of *Bulletin*. Present office: American Dietetic Association, chairman, Library Committee.

For Treasurer: Millie E. Kalsem, B.S., Iowa State College. Graduate study: Approved Training Course for Student Dietitians, Michael Reese Hospital; Graduate Study, University of Illinois Medical School. Positions held: dietitian, Beaver Valley General Hospital, New Brighton, Pennsylvania; dietitian, Iowa Methodist Hospital, Des Moines. Present position: chief executive dietitian, Cook County Hospital and director of Dietary Department, Cook County School of Nursing. Publications: articles in *Modern Hospital*, November

1931, June 1935; pamphlets; *Poultry and Egg Magazine.* Professional activities: (a) American Dietetic Association, chairman, Organization Book, member, Nominating Committee; (b) Illinois Dietetic Association, president, chairman state convention, chairman Nominating Committee; (c) Chicago Dietetic Association, vice president, president. Present office: Illinois Dietetic Association, delegate to House of Delegates.

Nominating Committee Nominees 1939–1940

Nell C. Clausen, Sc.B., Oklahoma Agricultural and Mechanical College, Stillwater; graduate, Approved Training Course for Student Dietitans, Bellevue Hospital, New York City; formerly dietitian, Bellevue Hospital, Walter Reed Hospital, Washington, D. C., and Schrafft's Tea Room, New York City; now head dietitian, Milwaukee Children's Hospital, Milwaukee.

Lenna F. Cooper, diploma, Drexel Institute, and B.S., M.A., Columbia University; formerly dean of Home Economics, Battle Creek College, supervising dietitian, U. S. Army, and food director, University of Michigan; now chief, Department of Nutrition, Montefiore Hospital, New York City.

Fern W. Gleiser, B.S., University of Washington, M.S., Teachers College, Columbia University; formerly instructor in Institution Management, Oregon State College, and Teachers College, Columbia University, and associate professor and head of Institution Management, Drexel Institute; now professor and head of Institution Management, Iowa State College.

Gertrude McDonald, B.S., University of Wisconsin; graduate, Approved Training Course for Student Dietitians, Peter Bent Brigham Hospital, Boston; formerly dietitian, Beth Israel Hospital, Boston; now chief dietitian, Peter Bent Brigham Hospital.

Mrs. Peggy D. Newsom, B.S., Blue Mountain College, graduate study, Baptist Memorial Hospital, Memphis, Tennessee; formerly head dietitian, Emory University Hospital, Atlanta, and Georgia Baptist Hospital, Atlanta; now dietitian, Sears Roebuck and Company, Atlanta.

Jennie Rowntree, certificate, Milwaukee-Downer College, B.S., University of Wisconsin, M.S., University of Chicago, Ph.D., University of Iowa; graduate, Approved Training Course for Student Dietitians, Presbyterian Hospital, Chicago; formerly assistant professor, Milwaukee-Downer College, and University of Washington, Seattle; now professor of Home Economics, University of Washington.

Mary E. Smith, B.S., Texas State College for Women, M.A., Teachers College, Columbia University; formerly instructor, Institution Administration and director of Cafeteria, Texas State College for Women, and dietitian, Flagler Hospital, St. Augustine, Florida; now chief dietitian, Memorial Hospital, Austin, Texas.

Adeline Wood, B.S., University of Illinois; graduate, Approved Training Course for Student Dietitians, St. Luke's Hospital, Chicago; formerly chief dietitian, University Hospital, Omaha, dietitian, Walter Reed Hospital, Washington, D. C., lunch manager, Schrafft's Restaurants, New York City, and supervising dietitian, Mt. Sinai Hospital, New York City; now national inspector of Approved Training Courses for Student Dietitians, American Dietetic Association.

BOOK REVIEWS

Crystalline Enzymes. The Chemistry of Pepsin, Trypsin, and Bacteriophage. By John H. Northrop, Ph.D., Member of the Rockefeller Institute for Medical Research, New York City: Columbia University Press, 1939; pp. 176 (appendix 33 pp.); 48 figures (10 photographs); 35 tables, 23.5 x 16 cm. Price $3.00.

This book is based upon the Jessup Lectures given at Columbia University in the spring of 1938 and deals largely with the results of the investigations of the author and his collaborators although generous recognition of the contributions of other investigators is evident in all of the discussions.

After a short introduction to the general chemistry of enzymes, Dr. Northrop gives concise but clear surveys of the results of his investigations on the isolation and chemistry of the proteolytic enzymes, pepsin, trypsin, chymotrypsin and carboxypeptidase; of their precursors, pepsinogen, trypsinogen, chymotrypsinogen and pro-carboxypeptidase; and of trypsin-inhibitor and of bacteriophage.

The book is well written in a clear concise style and presents a wealth of authoritative information with judicious interpretation of results and general avoidance of speculation or controversy.

The generous use of illustrations, tables, figures and photographs helps the reader to follow the discussion and to appreciate the logical scholarly treatment of the various topics. The text is made easier to follow because details of manipulation and procedure are assembled and discussed in an appendix which will be of great interest and value to other workers in the same or related fields. A bibliography of the work cited is given and an itemized table of contents and a detailed index add greatly to the general usefulness of the book.

The reviewer is impressed by the vast amount of work condensed into a relatively small space in easily readable form. The book should be of universal appeal.

It will be invaluable to the enzyme chemist, whether veteran or beginner, and one who has followed the detailed development of the subject will delight in the concise, judicious and logical summary of the outstanding points of the work.

Those readers who are interested in the more general aspects of dietetics and nutrition will find the latest information as to the nature and action of these important mammalian proteases and summaries of the differences which have been established between them.

The student of protein chemistry as such will also find much to ponder over and a storehouse of information in the discussions of the isolation and properties of these protein enzymes, of their action on other proteins; and of their formation from their protein precursors.—MARY L. CALDWELL, PH.D., *Assistant Professor of Chemistry and Adviser to Graduate Students, Department of Chemistry, Columbia University, New York City.*

The Chemistry of the Amino Acids and Proteins. By Carl L. A. Schmidt, Ph.D., Editor. Springfield, Ill.: Charles C. Thomas, 1938, pp. 1021. Price $7.50.

The volume has been prepared by Dr. Schmidt and a group of fifteen scientists actively engaged in studying the chemistry of amino acids and proteins. It is introduced with a quotation from Dr. William Beaumont (1833): "I submit a body of facts which cannot be invalidated. My opinions may be doubted, denied, or approved, according as they conflict or agree with the opinions of each individual who may read them; but their worth will best be determined by the foundation on which they rest—the incontrovertible facts."

The accumulated evidence which is reported from recent years of work impresses one with the vast improvement in methods that have been used in studying biological problems. Physical chemistry, thermo- and electrodynamics now contribute exactness which was formerly lacking in biochemical research. The resultant information "has done much toward promoting a better understanding of these substances" (amino acids and proteins) "in life processes". Only by such quantitative procedures and painstaking efforts can progress be made in solving the puzzles of the chemistry of life.

Dietitians in general will probably not be interested in the details of many of the investigations reported. They would be interested in the final chapters which review present knowledge of the rôle of proteins and amino acids in nutrition, in the relationship of structure of

proteins to immunological processes, and in the protein nature of enzymes.

The history of the isolation of amino acids and their identification as essential parts of the protein molecule is very interesting. The constitution and methods of synthesis and isolation of the various amino acids are ably discussed. Attention is called to the fact that most tables showing the amino acid composition of proteins are based on analyses of impure proteins and fail to take into account the addition of water during hydrolysis. Chapter V gives a valuable discussion of the relation of amino acids to various products of biological importance and of the availability of various amino acids for production of glucose and ketone bodies.

One of the most interesting chapters deals with the chemical constitution of simple and conjugated proteins. Attention is called to Bergman's theory of the periodicity of occurrence of individual amino acids in peptide chains and to Bergman's conclusion that proteins are built up of 288 amino acids or a multiple of this number. There seems to be considerable evidence that the synthesis of some proteins is a process of cyclization of polypeptides, forming hexagons lying roughly in one plane the thickness of one amino acid. Potentially, proteins are apparently both chain systems and cyclic systems, depending upon external factors. Amino acids in proteins are definitely oriented in space as indicated by physical, immunological and enzymic reactions. The authors also present detailed methods for studying the molecular weight of proteins.

Properties of proteins are discussed under the headings of coagulation, denaturization, surface tension and films, elasticity, viscosity, swelling of gels, optical properties, and their combining powers with acids, bases, heavy metals and other compounds. Careful consideration is given to the biological significance of the Donnon membrane equilibrium theory as applied to protein solutions and to the function of protein in life.—MARTHA KOEHNE, PH.D., *75 18th Avenue, Columbus, Ohio.*

Adequate Family Food Allowances and How to Calculate Them. Prepared by the Social Welfare and Public Health Department of the American Home Economics Association, with a representative from the American Dietetic Association. Family Welfare Association of America, 130 East Twenty-second St., New York, 1939, pp. 35. Processed. Price 40 cents.

This pamphlet will be found to be as useful a tool to dietitians, nutritionists and others working with low-income groups as it is to private and public agencies dealing with relief problems. It includes material that has appeared elsewhere and has been brought together in a very comprehensive manner.

The low-income group, in purchasing adequate food, faces problems as great if not greater than do those on relief. The bulk of persons met in out-patient departments and clinics fall within this group.

Because the food habits of people differ in various sections of the country according to their agricultural products, six food lists, and accompanying market orders have been set up for as many sections of the country. Each of these lists meets the required standards for the various age-groups at a minimum cost.

Figures used in calculating the nutritive value, in terms of total calories, protein, calcium, iron and vitamins of these foods, are given in a table in the appendix.

The hospital dietitian will find here a rapid method for calculating the nutritive value of the food served to any group. The nutritionist working in the out-patient department, food clinic or health agency, will find it an equally valuable aid for calculating the nutritive value of special diets or family food purchases.

The use of the same tools and standards by the various professional persons dealing with the same economic group will do much to erase the confusion raised in the minds of the general public by conflicting advice from two professional groups. The methods used to obtain adequate food should be comparable.—MAME TANNER PORTER, *Department of Social Welfare, State of New York, Albany.*

Study Guide Test-Book in Anatomy and Physiology. By Carolyn E. Gray, R.N., and Caroline E. Stackpole, A.M. New York: The Macmillan Company, 1939, pp. 105. Price $1.00.

This compilation is based on the tenth edition of Kimber, Gray and Stackpole's *Textbook of Anatomy and Physiology*. Its main purpose is to serve as a study guide for student nurses in the preparation of lessons, and as a test-book

for teachers in conducting written quizzes. The 100 pages of exercises can be altered to suit the teacher's plan of work since each exercise is a unit in itself. The preparation and presentation of questions take much of the teacher's time, therefore this test-book should save time for the teacher since the brief questions and the definite value given each answer make it possible to rate the answers quickly and easily. Diagrams and illustrations, some of which are in color, have been rather extensively used and add materially to the value as a teaching aid.

The Mechanism of Thought, Imagery, and Hallucination. By Joshua Rosett, M.D., Professor of Neurology at Columbia University, and Scientific Director of the Brain Research Foundation. New York: Columbia University Press, 1939, pp. 271. Price $3.00.

This original work reveals for the first time the foundations of the three primary mental functions. The book is divided into the following headings: The Law of Evolution and Dissolution of the Nervous System; The Emotional State; The Relation of the Emotions to the Conscious, Sensory, or Informative State; The Expression and Subjective Experience of the Emotions; The Will; Nerve Signaling; The Effect of Injuries of the Association Systems; Representation and Symbolism; A Definition of Thought, Imagery, and Hallucination; Hallucinations in Certain Injuries and Diseases of the Nervous System; The Epileptic Seizure; The State of Attention; Sleep.

Of special interest to the dietitian is chapter 2, covering the emotional state and the physical basis of the emotions. Herein are detailed the functions of the emotions in the redistribution of the bodily energies; the arrest of digestion during strong emotions; changes of the blood sugar content in emotional states; increase in the number of red blood cells during muscular activity; and diminished fatigability of the muscles in the strong emotions.

The Rockefeller Foundation, A Review for 1938. By Raymond B. Fosdick. New York: 1939, pp. 72. Copies free upon application.

The several chapters detail the vast fields of work covered by the Foundation. Among the more spectacular developments have been the million vaccinations effected to combat yellow fever, the control of malaria, and other public health services on a wide front. Appropriations for research in the medical sciences have been continued both in universities in America and in foreign lands.

A more recent departure of the Foundation has been in the field of molecular biology. Grants have been made for this work, chiefly at the Universities of Washington, St. Louis, and that of Leeds, England; New York and Columbia Universities; and the Universities of California and Rochester.

Under experimental biology particular interest has been shown in the development of organic chemistry of natural substances. An award was made to Cornell University for research over a period of three years on the biochemistry of proteins, peptides, amino acids, hormones and related compounds. The University of London has received a fund for a seven-year period to be applied on a study of vitamins, sterols and related compounds.

Under the heading "The Retreat from Reason" Mr. Fosdick states that "to speak of research in the field of international relations in such an anxious and disillusioned hour as this may seem almost like a jest". Never before has there existed the possibility of such material havoc and cultural disintegration. For the moment, at least, the world is facing a cultural crisis in which reason is everywhere in retreat. Yet despite the gloomy outlook never has there been a greater need for intelligent understanding of the social forces that are molding the future. A solution must be based on realities, not on intuition or wishful thinking, and the problem if solved at all will be through the same scientific approach to facts, made in the same dispassionate spirit of inquiry, which has given man command over his physical environment. Acting upon this faith, the Foundation is continuing its support in the field of international relations.

Bulletin of the Health Organisation. League of Nations, Volume VII, No. 4. New York City: Columbia University Press, 1939, pp. 681. Price 65 cents.

The current bulletin covers the work to date of the Commission on Physical Education, a summary of the work of the Health Organisation for the past year and a report of the Special Committee of the Technical Commission on

Nutrition, which met in Geneva in August 1938. Under the work of the Health Organisation is included that concerning the Standardisation Conference on vitamin unitage. With the isolation of the pure vitamin substances the present international standard will need to be revised. Other problems were concerned with the standardization of hormones. The meeting in Geneva in August was concerned chiefly with the need for planning emergency measures against famine necessitated by the present critical circumstances in Europe. The Special Committee has suggested diets to meet such emergencies.

CURRENT LITERATURE

American Journal of Digestive Diseases

Vol. 6, April 1939

*Histological study of hypervitaminosis D. The relative toxicity of the vitamin D of irradiated ergosterol and tuna liver oil. R. S. Harris, B. D. Ross and J. W. M. Bunker.—p. 81.

*Management of peptic ulcer hemorrhage. D. C. Browne and G. McHardy.—p. 87.

*Bleeding peptic ulcer. G. C. Turnbull and J. H. Sagi.—p. 92.

*Pectin and nickel pectinate in acute and chronic bacillary dysentery. L. H. Block, A. Tarnowski and B. H. Green.—p. 96.

*The use of food in the treatment of bleeding ulcer. W. D. Mayer and J. J. Lightbody.—p. 108.

*Clinical experience with crystalline insulin. A. Levitt and S. J. Jaskiewicz.—p. 110.

*The effect of apples and cranberries on calcium retention. A. Mindell, W. B. Esselen and C. R. Fellers.—p. 116.

*The etiology of pellagra. F. R. Taylor.—p. 123.

HYPERVITAMINOSIS D. The vitamin D of irradiated ergosterol (D_2) is definitely more toxic than the vitamin D of tuna liver oil (D_3) as measured by tissue calcification produced by the daily administration of 5000 times the therapeutic dosage of D for rats.

PEPTIC ULCER HEMORRHAGE. Treatment by continuous drip with aluminum hydroxide is a recent successful form of therapy. After bleeding has ceased, feedings of milk, gelatin and lime water are given. Feedings are slowly increased until at the end of 2 weeks the patient is on a puréed diet of 3 small meals and intermediate feedings. Cevitamic acid is given as a supplement.

BLEEDING PEPTIC ULCER. Eighty cases were studied over a period of 10 years. The longer patients were starved and kept on a Sippy régime, the longer bleeding continued. The more liberally fed patients were hospitalized an average of 9 days per patient as compared to 34 days per patient in the other group.

PECTIN AND NICKEL PECTINATE. In a study of 95 patients with bacillary dysentery, pure pectin was found to be ineffective. Nickel pectinate was found to possess detoxifying bactericidal and anti-hemorrhagic properties with excellent results in the majority of cases.

USE OF FOOD IN BLEEDING ULCERS. In a study of 74 patients the Meulengracht diet was used with excellent results.

CRYSTALLINE INSULIN. In general, more crystalline insulin than regular insulin was required to standardize a patient but the number of injections was less and the blood sugar levels approximated the normal over a longer period of time. Protamine insulin, however, seemed to give the best results in the 77 patients studied.

APPLES AND CRANBERRIES. The inclusion of 20% fresh cranberries or apples in an adequate diet increased calcium retention in white rats. This effect is probably due to the increased acidity of the intestinal contents and the possibility of more soluble calcium salts being formed.

PELLAGRA. A deficiency in the P-P factor is not an adequate theory of the etiology of pellagra. The etiology is probably fourfold: a deficiency of P-P factor; an intrinsic deficiency in the gastric juice; exposure to sunlight; and an unidentified microorganism or virus which is pathogenic only in the presence of one or both of the just mentioned deficiencies.

American Journal of Diseases of Children

Vol. 57, March 1939

*Hypothyroidism and cretinism in childhood. VI. Influence of thyroid therapy on mental growth. A. W. Brown, I. P. Bronstein and R. Kraines.—p. 517.

*Effect of yeast extract on growth and development of premature infants. H. R. Litchfield, J. Licherman, I. Knoll and I. Kurland.—p. 546.

HYPOTHYROIDISM AND CRETINISM. Twenty-nine cretins and 4 "juvenile hypothyroid" children who were being actively treated with thyroid were given psychologic tests over a period of from 1 to 7 years to determine mental development. It was found that cretins are not all predestined to a fixed low mental age. A small portion of them may develop normally. Early recognition and persistent treatment are important. Most of the children remained severely retarded, having an intelligence quotient below 70. The chances are that at ma-

turity the mental level will not be much above 10 to 11 years. Examination of siblings indicated that the cretins did not come from families of low intellectual status.

YEAST FOR PREMATURE INFANTS. Infants receiving yeast extract showed gains in weight much sooner than the controls. Of the group receiving yeast extract, 55% began to gain during the first week of life, whereas less than 8% of the controls showed a gain during the first week. Infants with birth weights under 1500 gm. who were given yeast extract attained 4 to 5 times their birth weight at the age of 3 months, as compared with the controls who only doubled or tripled their weight at this age. No gastrointestinal symptoms accompanied the administration of yeast extract.

American Journal of Physiology

Vol. 125, April 1939

*Hyperparathyroidism produced by diet. E. J. Bauman and D. B. Sprinson.—p. 741.

HYPERPARATHYROIDISM. Hyperparathyroidism in rabbits has been produced by feeding a low calcium diet high in phosphorus. This diet causes enlargement of the parathyroids to two or more times their normal size and hypertrophy of the cells and nuclei with an increase in the amount of lipids in the cytoplasm. Serum calcium and phosphorus are low but within the normal limits, while serum phosphatase is less than normal. Aside from increased vascularity, no important changes were found regularly in the bones.

Annals of Internal Medicine

Vol. 12, March 1939

*Diabetic coma. (An investigation of mortalities and report of a severity index for comparative studies). I. M. Rabinowitch, A. F. Fowler and E. H. Bensley.—p. 1403.

*The development and importance of hypertension in chronic Bright's disease. H. O. Mosenthal and H. H. Lander.—p. 1449.

*Serum proteins in rheumatoid disease. C. W. Scull, T. F. Buck and R. Pemberton.—p. 1463.

*Some limitations in preventive medicine. H. A. Christian.—p. 1499.

*The use of thiamin in neurological diseases. Editorial.—p. 1530.

*Non-granulomatous chronic enteritis. D. Adlersberg and M. Weingarten.—p. 1486.

MORTALITIES IN DIABETIC COMA. Mortality in diabetic coma depends less upon the comparatively low values of the CO_2 combining power of the blood plasma than upon the condition which precipitated the coma. When acidosis is the dominant factor, the CO_2 is lower than when coma results from infection and other complications. The highest mortality was noted in cases with CO_2 values greater than 25. Failure of kidney function is a serious complication of diabetic coma. There is a remarkable parallelism between the concentration of urea in the blood and mortality.

HYPERTENSION IN CHRONIC BRIGHT'S DISEASE. It becomes evident on observation and treatment of cases of chronic diffuse glomular nephritis that equal, if not more importance should be attributed to hypertension than to renal insufficiency as a possible fatal complication. Two cases are noted in which patients placed on a high protein diet, after a period on a low protein diet, showed a lowering of the blood pressure and a marked improvement and disappearance of albuminuric retinitis.

SERUM PROTEINS IN RHEUMATOID DISEASE. A statistical analysis showed that slight changes occur with respect to the total protein levels in patients with rheumatoid disease. The extent of deviation from normal parallels certain phases of the clinical condition. Therapeutic measures, including provision of an optimal supply and balance of nutrients, protection of inflamed or irritated tissue, removal of sources of toxemia and infection, are essential to any fundamental approach to arthritis, whatever the categorical type presented.

LIMITATIONS IN PREVENTIVE MEDICINE. Preventive medicine by its success has resulted in more sub-par older people subject to non-preventable degenerative diseases. Certain inevitable limitations will persist.

THIAMIN IN NEUROLOGICAL DISEASES. There is fairly convincing evidence that thiamin may relieve pain and cause improvement in the general condition of the patient with neuritis which is not caused by a deficiency. Vorhaus and his associates think that thiamin exerts a "non-specific" effect on neuritis, regardless of its origin.

CHRONIC ENTERITIS. Chronic non-granulomatous enteritis frequently observed following gastric operations and as a residuum of acute intestinal disorders seems to be related to vitamin deficiency. Treatment includes a light, bland, cellulose-poor diet with moderate amounts of fat, mild astringents, liver extract by injection, and a large supply of vitamins, especially B, given parenterally. There is a great tendency to recurrence of symptoms when treatment is suspended.

Archives of Internal Medicine

Vol. 63, March 1939

*Intubation of the human small intestine. XII. The treatment of intestinal obstruction and a procedure for identifying the lesion. W. O. Abbott.—p. 453.

*Relation of hyperthyroidism to hypertension. J. D. Bisgard.—p. 497.

*Ascorbic acid in blood and urine after oral administration of a test dose of vitamin C. A saturation test. G. A. Goldsmith and G. F. Ellinger.—p. 531.

Progress in internal medicine. Bright's disease. A review of recent literature. W. S. McCann.—p. 590.

TREATMENT OF INTESTINAL OBSTRUCTION. After intubation in a case of obstruction, a diet of strained soups, fruit juices, eggs, rare beef, farina, boiled or puffed rice, jelly and zwieback or cracker will go far to restore the calories, protein, and electrolytes, while the nature of the lesion is being studied.

RELATION OF HYPERTHYROIDISM TO HYPERTENSION. As a physiologic response to hyperthyroidism, the systolic blood pressure is usually slightly or moderately elevated. It recedes to the normal level with relief of hyperthyroidism.

ASCORBIC ACID IN BLOOD AND URINE AFTER TEST DOSE OF VITAMIN C. The state of vitamin C nutrition is determined by measuring the ascorbic acid excretion in the urine for six hours after a 600 mg. dose of this substance. Response in normal vitamin C nutrition shows excretion beginning at end of 1 hour, peak between 1 and 6 hours, and original level at the end of 24 hours. An alternative procedure consists in the determination of the amount of reduced ascorbic acid in fasting blood and at the end of 1 and 3 hours after a similar test dose. There is a definite relation between the level of reduced ascorbic acid in the blood and the amount of this substance excreted by the kidney; when the former exceeds 1.4 mg. per 100 cc., urinary excretion increases. Mild vitamin C deficiency is extremely prevalent and too much importance should not be attached to depletion of the ascorbic acid content of the body in any disease.

Bulletin of The Johns Hopkins Hospital

Vol. 65, April 1939

*Diabetes, insulin action and the respiratory quotient. E. M. Bridge and E. A. Winter.—p. 257.

DIABETES AND INSULIN ACTION. Diabetic patients were studied in an attempt to correlate insulin action with blood sugar and respiratory quotient. No direct relationship was observed. Hypoglycemia from overdose of insulin is not due to abnormal rate of carbohydrate combustion. The mechanism probably consists of an excessive deposition of available glucose as glycogen in the muscles. The blood sugar level by itself is not an adequate criterion for judging the regulation of diabetes. Other aids are suggested.

Delaware State Medical Journal

Vol. 11, March 1939

*The therapeutics of iron and copper. E. Podolsky.—p. 44.

THERAPEUTICS OF IRON AND COPPER. Approximately 80% of the total iron content of the body is contained in the hemoglobin. The usual food of man is not particularly rich in iron. The quantity of iron excreted in the feces is almost equal to the intake. Ferric ammonium citrate is the most desirable iron compound from a therapeutic point of view. Copper is intimately associated with iron metabolism. Studies on rats and swine indicate that the greater part of the copper was confined to the liver. Iron and copper given in combination to children with nutritional and secondary anemia is more effective than iron given alone.

Hospitals

Vol. 13, April 1939

*Doctors, surgeons, and hospital superintendents cooperate in the treatment of diabetes. E. P. Joslin.—p. 36.

COOPERATION IN TREATMENT OF DIABETES. Cooperation between doctors, surgeons, and hospital superintendents in the treatment of

diabetes saves labor and expense for all concerned. It also provides infinitely better care for the patient and at far less cost to him and to the hospital. The present type of hospital population, problems of treatment associated with the diet of diabetics, the rôle played by exercise and by insulin, and the value of the pharmacy store are some of the points discussed.

Hygeia

Vol. 17, April 1939

A diabetic disposition. I. Leonard.—p. 308.
*Oleomargarine.—p. 353.
*What's in an egg? M. Dartnell.—p. 355.

OLEOMARGARINE. Oleomargarine is made by blending several kinds of highly refined fats and oils with pasteurized skimmed milk. Small amounts of emulsifying agents are added to prevent the oils and skimmed milk from separating. Oleomargarine is classified according to the source of the oil or fat used in its preparation. Some manufacturers now add vitamin A to margarine. Because of a ruling of the Bureau of Animal Industry of the U. S. Department of Agriculture, margarine produced from animal fat may not be fortified with vitamin A.

WHAT'S IN AN EGG? The diet of the hen is now scientifically adjusted to provide essential nutrients. With vitamin D in cod liver oil, temperature and humidity of atmosphere rigidly controlled, even the hours of activity are regulated by artificial light. Eggs are graded according to the size of the air space and size of egg has nothing to do with grade. The amount of vitamins G and B_1 is about the same in all eggs. Vitamin A varies with diet, number of eggs which the hen lays, and interval in the laying period. Vitamin D varies with the kind and amount of sunlight the hen receives. The color of the egg yolk does not indicate the amount of vitamin A present. The green food in the diet gives a darker yellow color to the yolk.

Journal of Biological Chemistry

Vol. 128, April 1939

*Muscle phosphorus in nutritional muscular dystrophy in rabbits. M. Goettsch, I. Lonstein and J. J. Hutchinson.—p. 9.
*Factor W and its relation to the vitamin B complex. D. V. Frost and C. A. Elvehjem.—p. 23.
Experiments with the filtrate factor. T. H. Jukes.—p. 35.
*The B vitamins and fat metabolism. II. The effect of thiamin upon the synthesis of body fat in pigeons. E. W. McHenry and G. Gavin.—p. 45.
*Protein anabolism of organs and tissues during pregnancy and lactation. L. J. Poo, W. Lew and T. Addis.—p. 69.
*On the site of the formation of citric acid in the animal organism. J. M. Orten and A. H. Smith.—p. 101.
*A low phosphorus diet and the response of rats to vitamin D_2. H. Schneider and H. Steenbock.—p. 159.
*The vitamin C content of human urine and its determination through the 2,4-dinitrophenylhydrazine derivative of dehydro-ascorbic acid. J. H. Roe and J. M. Hall.—p. 329.
*Effect of amino acids on anemia caused by deaminized casein. R. E. Guerrant and A. G. Hogan.—p. 363.
*Effect of carbohydrate and fat in the diet on uric acid excretion. D. Adlersberg and M. Ellenberg.—p. 379.

PHOSPHORUS IN MUSCULAR DYSTROPHY. In nutritional muscular dystrophy of the rabbit, there are no striking changes in the muscle phosphorus fractions until the muscles are severely degenerated. The phosphocreatine content of resting degenerated muscles is distinctly lower than normal, but its relationship to total acid-soluble phosphorus remains the same. There is no change in phospholipid phosphorus of muscle.

FACTOR W AND VITAMIN B COMPLEX. Species differences complicate investigations on the newer factors in the vitamin B complex. Evidence shows that factor W is distinct from vitamin B_6, the chick antidermatitis factor, and nicotinic acid. Results are presented to show that the response of rats to nicotinic acid and its amide is dependent upon the composition of the ration.

B VITAMINS AND FAT METABOLISM. Thiamin, as the only supplement to a polished rice diet, causes an increase in content of crude fatty acids in pigeons, presumably by synthesis from carbohydrate.

PROTEIN ANABOLISM DURING PREGNANCY. The rate of protein anabolism in growing rats is more than doubled towards the end of pregnancy and on the tenth day of lactation. The concentration of protein per 100 gm. of organ or tissue weight is most reduced in the serum and in successively less degree in the liver, blood clot, kidney, and heart in both pregnancy and lactation on a diet that contained 16% protein. There is a 28% increase in the proportion of protein assigned to the liver in pregnancy.

SITE OF CITRIC ACID FORMATION. The rat rapidly excretes increased amounts of citric acid in the urine after the parenteral administration of sodium malate. Determinations of the citric acid content, first of liver, blood, muscle, and kidney of intact rats and then of liver, blood, and muscle of bilaterally nephrectomized animals, lead to the conclusion that citric acid is produced chiefly in the kidney or is dependent upon the presence of the kidney for its formation.

VITAMIN D_3 RESPONSE IN RATS. A synthetic diet low in phosphorus and free of vitamin D but adequate in other nutritional requirements of the rat sufficed as the sole source of nutrients for three successive generations when supplemented with sufficient phosphorus and vitamin D. When the low phosphorus diet was supplemented with vitamin D, a cessation or inhibition of growth occurred. Calcium and phosphorus balances and tissue analyses revealed that vitamin D induced the utilization of phosphorus by bone, thereby depriving the soft tissues of their supply of phosphorus, which in turn inhibited growth.

DETERMINATIONS OF VITAMIN C IN URINE. A new method for the determination of ascorbic acid has been developed. The urine from 14 of 50 subjects who were apparently on an adequate diet showed no vitamin C.

AMINO ACID INFLUENCE ON ANEMIA. Of the various proteins examined, casein was the most potent source of the antianemic agent. A considerable portion of the activity remains after hydrolysis. Lactalbumin is relatively ineffective, and both corn and wheat gluten are still more deficient. The antianemic agent was not extracted from hydrolyzed casein by butyl alcohol.

CARBOHYDRATE AND FAT EFFECT. A high fat diet diminishes the uric acid excretion in normal individuals. A high carbohydrate diet, calorically equivalent to the high fat diet, does not depress the uric acid elimination. The factor responsible for the decrease in uric acid excretion in the urine is not the increased caloric intake, but the high fat content itself. These observations support the use of a high carbohydrate, low fat, as well as a low purine diet in the treatment of the uric acid diathesis.

Journal of Nutrition

Vol. 17, April 1939

*A quantitative biological assay of vitamin K. S. Ansbacher.—p. 303.

*An experimental determination of the minimum vitamin A requirements of normal adults. L. E. Booher, E. C. Callison and E. M. Hewston.—p. 317.

*Fluorosis in rats due to contamination with fluorine of commercial casein. H. C. Hodge, E. M. Luce-Clausen and E. F. Brown.—p. 333.

*The effect of protein and exercise at different ages on the total energy metabolism. A. Black and J. R. Murlin.—p. 347.

*The effect of protein and exercise at different ages on the basal metabolism. A. Black.—p. 361.

*The preventive effect of wheat germ oils and of α-tocopherol in nutritional muscular dystrophy of young rats. M. Goettsch and J. Ritzmann.—p. 371.

*A quantitative study by means of spectographic analysis of aluminum in nutrition. F. I. Scoular.—p. 393.

VITAMIN K. A ration has been found which permits the development of severe vitamin K-deficiency in animals within 15 days. A 6-hour curative blood-clotting method has been developed.

VITAMIN A REQUIREMENTS OF ADULTS. Five adult subjects maintained on weighed diets adequate in all known food essentials except vitamin A showed unmistakable signs of impaired dark adaptation after 16, 27, 29, 39 and 124 days, respectively. The daily intake of vitamin A necessary for maintenance of normal dark adaptation varied between 25 and 55 I.U. per kilogram of body weight while the daily intake of carotene varied between 43 and 103 I.U. per kilogram of body weight. Unit for unit the carotene in cottonseed oil was about 50 to 60% as effective in supporting normal dark adaptation as vitamin A in the form of cod liver oil.

FLUOROSIS IN RATS. The occurrence of fluorosis in the teeth of rats has been described. The length of the teeth showed a great increase, measurements of the color of the teeth showed marked diminution and the eruption rate was markedly slower than normal. The presence of fluorine in the diet intensified the effects of lack of radiation in the affected animals.

TOTAL ENERGY METABOLISM OF RATS. Egg protein is markedly superior to milk protein for producing growth in rats. The total heat production of six groups of animals decreased

decidedly with increasing age during the first 5 to 6 months of the experiment. After this it increased. The average total metabolism for exercised and non-exercised groups on milk rations was essentially the same. It was lower for the two non-exercised groups on the egg rations than for the exercised groups. Level of protein did not influence the average total heat production.

BASAL METABOLISM AND AGE OF RATS. The basal heat production in rats was found to be lowest on a low protein diet, somewhat higher on a high protein diet and highest on a high protein diet and exercise. In comparisons between animals of equal weights, a higher basal metabolism was found in older animals.

NUTRITIONAL MUSCULAR DYSTROPHY. A diet is described on which 90% of rats at the end of lactation suddenly become affected with severe degeneration of the skeletal muscles. Young rats are protected against the muscle disease by supplementing the diet with wheat germ oil, with oil of treated wheat germ in which the antisterility vitamin has been inactivated by ethereal ferric chloride or with α-tocopherol.

ALUMINUM IN NUTRITION. Thirty-five aluminum balance studies were made on 3 normal boys of preschool age. Neither the fecal nor the urinary excretion of aluminum bore any relationship to the amount of aluminum ingested. Some aluminum was present in all the urines, although the greater proportion of the ingested aluminum appeared in the feces. Half of the balances were positive and half were negative. Aluminum is probably not an essential constituent of the diets of preschool age children.

Journal of Pediatrics

Vol. 14, March 1939

*Oils as substitutes for butter fat in infant feeding. G. Frontali.—p. 290.

OILS IN INFANT FEEDING. Oil-flour or dry oil-milk in which olive oil is substituted for butter, permits an efficient utilization of fats (96.26%), is well tolerated, and leads to regular and continuous increase in weight. Similar food in which butter is used in place of olive oil gives inferior results.

Journal of the American Medical Association

Vol. 112, April 1, 1939

*The treatment of epilepsy with diphenyl hydrantoinate. O. P. Kimball.—p. 1244.
*Pellagra with psychosis and minimal physical symptoms. V. L. Evans.—p. 1249.
*A new dietary factor. Editorial.—p. 1258.

Vol. 112, April 8, 1939

*Vitamin A deficiency in normal and tuberculous persons. H. R. Getz, G. B. Hildebrand and M. Finn.—p. 1308.

Vol. 112, April 15, 1939

*Successful treatment of diabetic girls with protamine zinc insulin. P. White and L. Winterbottom.—p. 1440.
*Vitamin K: Its properties, distribution and clinical importance. A. M. Snell.—p. 1457.
*The nutritive value of wheat flour and bread. Editorial.—p. 1461.
*Effects of vitamin B complex on experimental hyperthyroidism. Current Comment.—p. 1462.

Vol. 112, April 22, 1939

*Conferences on therapy: Treatment of infections of the genito-urinary tract.—p. 1584.
Trauma and diabetes. Editorial.—p. 1592.
*Renal calculi in vitamin A deficiency. Current Comment.—p. 1595.

EPILEPSY. Epileptic seizures were entirely controlled by the use of dilantin in 62.7% of 129 cases studied at the Special School for Epilepsy in Detroit. Many of these showed hyperplasia of the gums associated with vitamin C deficiency. Treatment with 300 mg. daily of ascorbic acid produced only slight improvement in one patient in 3 weeks. Further studies are in progress.

PELLAGRA. A case study of a patient who had suffered several years from a psychoneurosis with anorexia nervosa and malnutrition is presented. Prompt and dramatic response was obtained when 500 mg. of nicotinic acid was given in divided doses in her feedings.

NEW DIETARY FACTOR. It was concluded after 3 years of experiments that monkeys require some factor contained in yeast or in liver extract in addition to the factors commonly recognized as part of the vitamin B complex. The name "vitamin M" has been tentatively given to this unknown nutritional factor.

VITAMIN A DEFICIENCY. Normal healthy persons are frequently deficient in vitamin A, as judged by biophotometric readings. All persons deficient in vitamin A benefited from treatment with halibut liver oil. In 53% of the tuberculous persons tested there was a deficiency in vitamin A which paralleled the severity of the disease.

PROTAMINE ZINC INSULIN. Protamine zinc insulin was successful in the treatment of 123 diabetic girls at Clara Barton Homestead Camp. Hyperglycemia and glycosuria were controlled even when diets liberal in calories and carbohydrates were prescribed.

VITAMIN K. In 1935 Dam of Copenhagen observed that chicks suffered from a fatal hemorrhagic disease associated with a fall in the prothrombin concentration of the blood. The condition could be controlled or prevented by administration of vitamin K which is widely distributed in nature. In the plant kingdom it is confined almost entirely to the photosynthetic portion of the plant. Soy bean oil and other vegetable oils contain it. Vitamin K may be produced by bacterial activity in the intestinal tract. Dam's unit is defined as the amount of antihemorrhagic material contained in 1 gm. of dried spinach. An increase in the quantitative level of prothrombin in the blood, and even control of actual hemorrhagic states can be accomplished by the oral administration of vitamin K, together with bile or bile salts. Adequate preoperative treatment with these materials will greatly reduce the hemorrhagic tendency commonly observed in cases of jaundice. Little is known of the effect of vitamin K in other hemorrhagic diseases.

BREAD. Throughout the ages, bread has been a symbol of food. The annual per capita consumption of wheat bread in the United States is 80 lb. Bread is a concentrated food and a cheap source of energy. Its nutritive value depends principally on the flour used in its preparation. Although the milling process does not greatly alter the proportion of protein in flour, it lowers the biologic value and seriously affects the ash content. The removal of wheat bran and wheat germ reduces the calcium content of the wheat one-half, the potassium content one-fourth and the phosphorus and iron one-fifth. The rachitogenic effect of a pure cereal diet can be counteracted by merely adding sufficient calcium to produce a favorable calcium: phosphorus ratio. White bread contains only one-fourth to one-sixth as much thiamin as whole wheat bread. By suitable supplementation with other foods, bread can be enjoyed without sacrificing the nutritional excellence of the dietary as a whole.

VITAMIN B COMPLEX AND HYPERTHYROIDISM. Carefully balanced and controlled experiments on rats show that thiamin chloride and yeast will enable hyperthyroid animals which have lost weight to regain their lost weight while still receiving thyroid gland. Thiamin chloride and yeast concentrate greatly stimulated the food intake of hyperthyroid rats.

TREATMENT OF GENITO-URINARY TRACT INFECTIONS. The ketogenic diet has been shown to be an effective means of treating urinary infections. Because of the limited amount of carbohydrate the high fat content is not completely metabolized and large amounts of the ketone bodies are eliminated in the urine, the urine becoming highly acid. The effective agent in the ketogenic diet is beta-hydroxybutyric acid, which is eliminated in the urine. It was the bactericidal action of beta-hydroxybutyric acid which led to the discovery of mandelic acid. Mandelic acid and sulfanilamide are both effective in the treatment of urinary infections in both adults and children.

RENAL CALCULI IN VITAMIN A DEFICIENCY. The rôle of vitamin A in experimental urolithiasis is recognized but the mechanism of stone formation is not entirely clear. Renal and ureteral calculi were produced in guinea pigs by feeding a diet deficient in vitamin A. Large plaques of desquamated epithelial cells were found in the pelvis and ureters. These acted as niduses for the formation of calculi. An improper mineral balance of the food, presence of infections in the urinary tract and excessive alkalinity of the urine are other factors involved in the genesis of urinary calculi.

Ohio State Medical Journal

Vol. 35, April 1939

Diabetes. H. J. John.—p. 373.

Public Health Reports

Vol. 54, March 17, 1939

*Mouth lesions associated with dietary deficiencies in monkeys. N. H. Topping and H. F. Frazer.—p. 416.
*Oral pathology in monkeys in various experimental dietary deficiencies. T. H. Tomlinson.—p. 431.

MOUTH LESIONS ASSOCIATED WITH DIETARY DEFICIENCIES. Observations on *Macacus rhesus* monkeys indicate that certain of the dietary deficiencies tested are associated with the development of varying manifestations of gingivitis, stomatitis, peridontal disease, and gangrenous sore mouth. Animals maintained on adequate diets showed little or no evidence of such oral pathology. Monkeys maintained on a stock diet showed no evidence of gingivitis or stomatitis when material from affected monkeys was transferred directly to them. Four plates illustrate the oral pathology of various vitamin deficiencies.

ORAL PATHOLOGY IN MONKEYS. The feeding of 39 monkeys on diets deficient in certain vitamins resulted in the development of necrosis of the peridontal tissues and oral mucosa. This was qualitatively similar in the B_2 complex deficiencies with variations in the flavin and nicotinic acid factors, in the C and in the D deficiency, and probably greatest in extent in the B_2 deficient groups. Three illustrative plates show the effect on the gingiva of the various vitamin deficiencies.

INSTITUTION MANAGEMENT

The American Restaurant Magazine

Vol. 22, March 1939

Refrigeration in food production.—p. 28.
High in the sky with T. W. A. L. C. King.—p. 30.
*Controlling your food costs. G. L. Wenzel.—p. 32.
*Crusts for your pies. M. B. Strause.—p. 34.
*Taxes and laws concerning you. R. V. Mayer.—p. 36.
*Our kitchen and waste motion. R. Billings.—p. 42.
*Color does make a difference. E. Pololsky.—p. 44.
*Overhead costs can be cut. F. Simonson.—p. 46.

Vol. 22, April 1939

*Forum's newest cafeteria. H. C. Siekman.—p. 22.
*Service carts help hold down operating costs. Editorial.—p. 29.
*Accounting for employees' meals. Horwath & Horwath.—p. 30.
*Fresh fruit for your pies. M. B. Strause.—p. 32.
New store fronts are profit boosters. Editorial.—p. 34.
Work or service? R. Billings.—p. 37.
*New equipment.—p. 50.

FOOD COSTS. The following are recommended as effective aids in controlling food costs: chart to check legitimate weights and count contents in containers; specifications for best size or weight and legitimate trim and weight of meat cuts; chart of standard size portions and correct number of portions secured from every item served on menu; chart with market prices telling how much each portion costs; chart specifying whether fresh, frozen or canned vegetables are cheaper according to prevailing market prices. Recommends control of the cost of each course at a definite per cent of total sales and taking advantage of current market values with the use of tested formulae or recipes for all foods served.

PASTRY. Three types of crusts, short mealy, medium flake and long flake crust are determined by the amount of water. Too much moisture makes crust shrink, too little causes it to split or crack. If ingredients other than water are thoroughly mixed, less water is needed and a more tender crust results. Flavor is controlled by shortening.

TAXES AND LAWS. A legislative research bureau of the National Restaurant Association has been formed to act as a clearing house for legislative information and to furnish new reporting service.

WASTE MOTION. In food production, planning involves transportation, physical change, promotion and food. By eliminating waste motion, time will be saved, total hours of workers will be reduced, greater orderliness and less waste will be secured. Check storage for waste motion and coordination with food production.

COLOR. Experiments tend to prove that strange colors have an adverse effect on digestion. Beverages are best served in plain glasses or those resembling the natural color of the liquid. The serving of food in brightly colored dishes has desirable effect on digestion.

OVERHEAD COSTS. Reduce overhead costs by eliminating wasteful practices and waste of all types. Be constantly on lookout to prevent accidents. Keep record of dishes and glassware broken and discuss cost with employees. Check regularly and watch garbage for missing silver. Keep equipment in good condition. Teach employee policies and business system of the departments; record all purchases and check as they come in; keep an inventory, and a control of cash and food. Know from day to day how business stands. Maintain an efficient, well trained and well paid group of satisfied employees by being patient, considerate and tolerant, and taking an interest in employees' welfare. Train employees to work quietly, orderly, thoughtfully, more efficiently, to provide better service for the customer.

CAFETERIA IDEAS. Detailed description of equipment and furnishing of Forum cafeteria in Chicago. Expensive equipment and decoration are shown to be profitable even in the cafeteria specializing in low cost meals. Particularly interesting are the subveyors that carry used dishes down to the basement, sort the dishes and after washing, return them. Three separate machines are used for rinsing, washing and scalding. Seven refrigerators keep food spoilage at minimum. A merchandizing trick is used in making corners and sections so attractive that slow diners are lured away from counter tables, thus leaving these free for hurried customers.

SERVICE CARTS. Streamlined service carts save steps for waiters and made a Southern California restaurant famous. Guests enjoy choosing their own food for quality and quantity. The carts may be iced or heated. The traffic lanes will require careful planning where carts are used in the dining room.

EMPLOYEES' MEALS. Suggestions for accounting employees' meals. Commissary and stewards' sales of profit should be listed with gross sales. No profit sales should be credited to cost of food consumed. Employees' meals should be deducted from food consumed with contra entries against respective employee departments as designated by payroll schedule.

FRESH FRUIT PIES. Recipes for two fruit salad chiffon pies and details of fruit and cream garnishes that provide eye appeal to customers.

NEW EQUIPMENT. New headliners described are: Colt Dishwashers, Super Cube Steak Machine "Rimrol," new reinforced china, Thermolator Units, Burkay Water Heater, Recording Thermometer, Automatic Shutters, and a York Compressor of W-type which is an outstanding development.

Buildings and Building Management

Vol. 39, April 1939

Effective renting.—p. 18.
Protective modernization. J. J. Sayer.—p. 20.
*Selecting the right coal. H. F. Hebley.—p. 22.
*Innovative air-conditioning.—p. 28.
*Paint reflection values.—p. 33.

FUEL. Changing from one type of fuel to another is not a simple matter. It requires careful consideration such as: cost of redesigning the furnace and equipment; size of the building; number of square feet of direct radiation; equivalent number of square feet of indirect radiation; occupancy of building; refrigeration load and air-conditioning; and the problem of changing from winter to summer loads.

AIR-CONDITIONING. By the installation of a shaft, all operating equipment for the air-conditioning system in the Magnolia Building, Dallas, Texas, will be housed on every other floor allowing 5000 square feet of additional usable floor space. Air cleanliness is provided by passing all air through a water spray which also humidifies the air during the summer months. The incorporation of a "sun-zone control" makes the system flexible, automatic by remote control, and economical, and guarantees results.

PAINT REFLECTION. Scientific tests using both mercury and incandescent light have been made on 21 interior color tints. Mercury vapor lighting requires paints with good reflection values—pinks, orange and red mixtures must be avoided. Upper ceilings should have a reflection value of 85%, upper walls 45% and lower walls and floors 20%. The Mazda lamps were found to compare favorably with the mercury tests.

Chain Store Age

Vol. 15, April 1939

*Fluorescent lighting. F. E. Landau.—p. 16.
*Finding and controlling hidden expenses. C. Whowell.—p. 20.

FLUORESCENT LIGHTING. Increasingly popular is the newest feature in lighting—fluorescent lighting. The General Electric and Westinghouse Electric Companies recommend the fluorescent lamps for showcase and supplemental lighting rather than for display windows and general illumination. Advantages of this new type of lighting are: effectiveness, more efficient lighting, production of a minimum amount of heat during operation, more attractive and unusual color effects, long life, comparatively less expensive to operate when fixed charges are estimated. Increased efficiency means that greater candlepower is made possible at lower wattage than necessary for incandescent lamps. Color is produced directly by the action of the invisible rays. This is in contrast to incandescent lamps in which a filter reduces candlepower by holding back certain color rays. Disadvantages of fluorescent lighting in its present stage of development are: higher initial expense for installation, poorer control of light, higher operating costs if the power rate is 4¢ or more, less developed and artistic fixtures. The demand for fluorescent lighting at present far exceeds the facilities of the manufacturers to provide it.

HIDDEN EXPENSES. This article discusses visible and invisible food and management costs that decrease restaurant profits. A system of cost accounting shows the restaurateur the visible operating costs: food, light, heat, payroll, and rent. Less obvious costs arise from accidents, wasted foods, loss of good-will, damage to machinery and equipment, initial and carrying charges of ever-increasing insurance premiums. Suggests four steps to reduce or eliminate high insurance costs resulting from accidents: create interest in accident prevention; discover unsafe physical conditions or unsafe employee habits; take definite action to eliminate accidents; follow up whatever actions are taken in correcting each specific accident and ascertain that instructions are being followed.

Horwath and Horwath

Vol. 19, March 1939

Country club operating ratios. Editorial.—p. 4.
*Fish—butchering tests and purchase specifications. Editorial.—p. 5.
*Stock record—china, glassware, silver and linen. Editorial.—p. 6.

Vol. 19, April 1939

*Test on bread.—p. 2.
*Food and beverage costs.—p. 3.

FISH. The article summarizes, by means of charts, the results of a series of tests on the purchase, dressing and preparation of fish. Market specifications for fish based on these studies are given.

RECORD CARDS. A detailed, convenient, 8½" x 11" ring punched card for stock inventory and record includes columns and space for purchases, issues, price control, description and evaluation. Complete description and sketch of the card are given.

BREAD. Tests made of a recipe for bread, used by a New York City hotel, yielding four 5 lb. sandwich loaves and one 4 lb. toast loaf or a total of 24 lb. of bread. Each pound costs $.0283; a 5 lb. sandwich loaf, $.1415; and a 4 lb. toast loaf, $.1132. Total ingredients in recipe cost $.6792.

FOOD AND BEVERAGE COSTS. The total food cost per dollar sale was the same as last month but there were marked increases in New York and Chicago and a slight decrease in "all others." Causes for the increase were the drop in restaurant business and the higher market on many commodities. Beverage costs were all down 3% as compared with 2% in the 3 preceding months.

Hospitals

Vol. 13, April 1939

*That changing hospital dollar. H. E. Hess.—p. 63.
An approach to the hospital personnel problem. J. A. Hamilton.—p. 71.
*Shortcuts to a balanced budget. R. D. Brisbane.—p. 98.

HOSPITAL DOLLAR. Records of the Nebraska Methodist Hospital show that an experienced dietitian can decrease the amount spent on

foods by careful planning of meals and elimination of waste. Savings were made on bread, butter, cream and foods held in refrigerators.

BALANCING THE BUDGET. Gives many good suggestions to help cut dietary costs. Some of these are: mechanical bread slicer for bread made in the institution; ice cream freezer to make own ice cream; frequent checks on waste.

Hospital Management

Vol. 47, March 1939

*New kitchen at Harper Hospital facilitates food service.—p. 40.
*Michael Reese coffee shop is successful business venture. O. Wolf.—p. 42.

NEW KITCHEN. The remodeled kitchen at Harper Hospital, Detroit, demonstrates that it is possible to have simplicity in the operation of a kitchen. New equipment in kitchens, nurses' cafeteria and dining room has paid for itself in workability and satisfaction.

MICHAEL REESE COFFEE SHOP. A cheerful, well decorated dining room with air-conditioning and sound proofed ceiling has proved to be a satisfactory business venture. The original investment was loaned by the hospital and is being repaid by the shop. The coffee shop is for the use of personnel, doctors, and guests of the patients.

The Hotel Monthly

Vol. 47, March 1939

*Why the "Boss way" makes Boss hotels pay.—p. 14.
*Electric eye outwits skippers.—p. 18.
*Hotel sales promotion and public relations. L. Boomer.—p. 20.
*Carpet dyeing complaint and answer.—p. 32.
*The coffee shop.—p. 33.

"BOSS WAY." A description of remodeling and changes made in lobbies, assembly and dining rooms, in several units of a chain of 17 hotels.

ELECTRIC EYE. Describes the results of the installation of an electric eye at the fire escape exit. This installation cost $83 but not one guest has "skipped" since installation. The electric eye is an inexpensive form of insurance.

SALES PROMOTION AND PUBLIC RELATIONS. Pleasing the public is the objective which spells success. Public relations start with employees. Selection, attitude, higher standards, protection and security, grievances, good-will within, and other methods are discussed by Mr. Boomer as prime factors in employee-employer relationships, as well as phases of collective bargaining. This is an excellent article on successful hotel promotion and good public relations, applicable to any field of management.

CARPET DYEING. Worn out carpets can only be remedied by laying new carpets. Conditions are given under which a reliable carpet dye may be used successfully. Gives specific instructions for application of the dye to secure satisfactory results.

COFFEE SHOP. Interesting combinations with recipes for popular-priced items tested and proved by Ernie Boles, chef of the Palmer House Coffee Shop, and excellent illustrations make this article valuable. Lenten dishes are featured, including sea perch, noodle pancake with stewed prunes, baked noodles and prunes, and sunrise scrambled eggs; also potted ox joints and other popular combinations.

Journal of Home Economics

Vol. 31, April 1939

*Training for community nutrition work. R. L. White.—p. 221.
*The educational possibilities of the school lunch. M. G. McCormick.—p. 226.
*Housing education for college home economics students. C. Feiss.—p. 232.
*Home economics in Texas colleges and universities. L. Rathbone.—p. 236.
*Crease-resistant fabrics. M. S. Furry.—p. 241.
*What about radio? Editorial.—p. 245.
*Good advertisements. Editorial.—p. 247.

COMMUNITY NUTRITION WORK. Simmons College, recognizing the value of training the student for health or welfare work, has created a course for the training of future community nutrition workers. Its two aims, provision of vocational guidance and socializing student's knowledge of nutrition principles, are reached through one class hour a week throughout the year and 24 half-days of field work. Emphasis in field work is placed on diet in disease through work in clinics or in visits to the slums. Class

hour is concerned chiefly with application of normal nutrition made realistic by preparing talks to be given to the patients. Field work is conducted in 5 health agencies in Boston. In the food clinics the students observe and practice interpretation of physician's food prescription to ambulatory patients, and in the Forsyth Dental Infirmary they work with children and mothers. Class trips are made during the 4-week period between field work assignments. In setting up a course the following recommendations are made: instructor with an intimate knowledge of community nutrition; number of students in class should depend on the field work facilities; and the training centers should be judiciously selected.

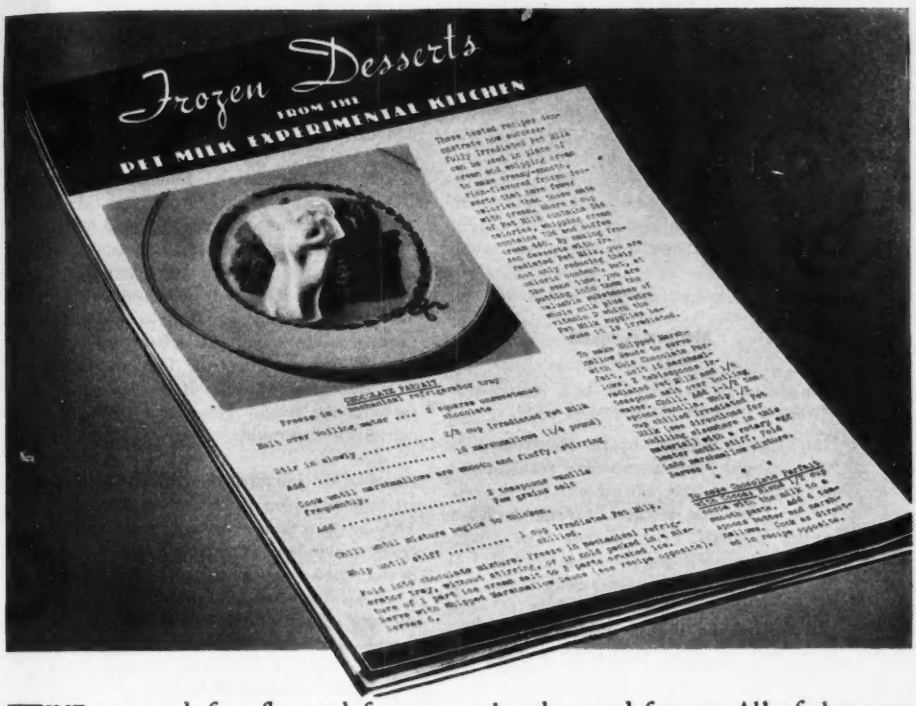
SCHOOL LUNCH. The school cafeteria presents an excellent teaching medium. Good health habits and correct eating habits can be taught by providing healthful food and a homelike atmosphere during a supervised lunch period in an uncrowded dining room. The cafeteria menu provides an opportunity for making choices; for learning to do by doing; for cooperation with others—both faculty and students; and also provides facilities in health training often hard to obtain in schools. Definite general objectives, administrative objectives and educational objectives should be formulated to make the school lunchroom a place in which to increase student knowledge and at the same time feed them healthful food.

HOUSING EDUCATION. Due to the increased interest in the serious problems of housing, the National Association of Housing Officials two years ago created a committee on instruction and research, its first duty being to check existing housing instruction. In a sample survey conducted with limited funds 570 questionnaires were sent out to social service, engineering, agriculture, home economics, arts and science, architecture, and general departments of 365 universities, state colleges, state normal schools, and architectural schools; 270 replies were received stating that 194 institutions taught planning or housing. In the home economics questionnaires it was found that 13 departments have specific courses, 9 have such courses which are part of the general curriculum and included under sociology, economics and so forth, 4 reported courses with no certain name. Three teachers' colleges were found to have instruction in housing and only 1 out of 33 architectural colleges have instruction.

TEXAS HOME ECONOMICS. In the large state of Texas there are 9 state supported teachers' colleges and 12 colleges and universities including 8 denomination schools and 4 state schools offering courses in home economics. Five of the state-supported schools offer homemaking training for boys. Education in home economics is encouraged and stimulated in some of the state schools through scholarships. Home economics affiliated clubs of Texas hold meetings every spring at one of the schools and in 1938 an attendance of 65 represented 15 clubs. Home economics is also offered in 18 of the 33 junior colleges in Texas.

FABRIC. Crease resistance fabrics of rayon, cotton, and linen developed by impregnating the materials with synthetic resin, to make the fabric more wiry and elastic, were submitted to tests which show that the linen and rayon were found to be the most flexural resistant; laundry tests showed that all fabrics lost resilience, greatest loss being for linen, and that the method of washing determines the life of the crease resistance; mild soap and hand washing being the best method. Further tests show that the shrinkage in cotton and linen was under 2% and that of rayon more; greater strength along the warp than the filling makes the fabric more resistant to yarn slippage at the seams.

RADIO. The A.H.E.A. is greatly concerned about the quality of radio programs and how to control them. No specific measure is before Congress but the subject was included in the program. Main conflict comes in the matter of "freedom of the air." Senator Burton K. Wheeler, who heads the Senate Committee on Internal Commerce to which all radio legislation is referred, denies that radio station owners have the right to determine what radio programs the listeners shall and shall not hear. National Committee of Education by Radio is attempting to develop an organization through which public opinion on radio programs may be voiced.



FINE textured, fine flavored frozen desserts and velvety smooth sauces to serve over them can be made from the tested recipes in the varied collection, entitled, "Frozen Desserts from the Pet Milk Experimental Kitchen," which has been created for teachers to distribute to their students.

Some of the desserts, using whipped Pet Milk in place of whipping cream, are to be made in a mechanical refrigerator. Others, using Pet Milk in place of coffee cream and milk, are to be made in a hand-turned freezer. All of them are more wholesome and less expensive than such desserts made with whipping cream, coffee cream and ordinary milk.

These frozen desserts and sauces are more wholesome because they contain an extra large amount of the much-needed whole milk, as well as extra vitamin D. They cost less because Irradiated Pet Milk is much less expensive than whipping cream or coffee cream. It costs less generally than ordinary milk.

PET MILK COMPANY, 1450f Arcade Building, St. Louis, Missouri

Please send me *free of charge* _____ copies of "Frozen Desserts."

I teach (subjects)_____ in_____ school (grade)

*Name*_____ *Address*_____

*City*_____ *State*_____

(*Fill in completely. Offer limited to residents of Continental U. S.*)

(In writing advertisers, please mention the journal.)

ADVERTISEMENTS. It is admitted that advertisements are essential tools to present day business, but they should not be misused. *Advertising and Selling*, a trade magazine, makes annual awards of merit to individuals and firms for distinctive work during the year based on advertising and advertisements "which contribute most to advertising as a social force"; and for "technical excellence and ethical soundness" of advertisements in national magazines and trade or professional publications.

Modern Hospital

Vol. 52, April 1939

*New kitchens for state hospitals. L. R. Bowen.—p. 90.
*Purchasing fresh peas. M. M. Buckles.—p. 96.

NEW KITCHENS FOR STATE HOSPITALS. In Missouri and Nevada extensive rehabilitation programs have been carried out for the constructing of new kitchens and cafeterias in mental hospitals. The cafeteria style service has many advantages for these patients. A few are: avoidance of waste; service of hot food to the patient; selection of food by patients. The therapeutic effect is good, since patients dress for meals, carry their trays, and eat in a dining room.

PURCHASING FRESH PEAS. Factors determining yield and quality of peas are: variety, season of maturity, freedom from disease, weight of hamper as purchased. Tables and explanations of yield and cost for serving accompany the article. The average weight of 61 hampers of peas is 32.5 lb. and the average cost per 100 gm. serving ranges from $.04 to $.06.

The Nation's Schools

Vol. 23, April 1939

*Choice, care and cost of uniforms. E. Gilbert.—p. 70.
*Cafeteria at Fitchburg. E. L. McIntire.—p. 72.
*Why have a lunchroom? F. C. Moore.—p. 74.

UNIFORMS. Cotton suiting, twill, broadcloth and poplin are popular and satisfactory materials. Comfort and fit of garments are essential for durability and appearance with a few simple fastenings and usable pockets also important. White is growing in favor because of appearance and increased sanitation. Uniforms are usually .75%–1.16% of laundry costs. Cost of rented uniforms does not cancel the advantages of style and fit. Comfortable plain oxfords are important, head bands are always worn. Students usually wear working aprons and head bands.

FITCHBURG CAFETERIA. Education, service, recreation, mark the modern school cafeteria. Complete equipment serves 750 in 5 minutes. Cooperation of departments and students makes the room attractive and popular. Music is available. The cafeteria operates with the health unit. Candy sales drop by selling candy in a separate room. Complete and supplementary dishes are served. Dishes sell for 5¢. The system of self-support and plan of the cafeteria are given. The aim is to make the cafeteria indispensable to the school.

PURPOSE OF LUNCHROOM. School lunchrooms are maintained for the benefit of the students. They are places of education. Habits for life are formed in food quality, preparation, service; in cleanliness and choice of well balanced meals. These are the responsibilities of the lunchroom manager. Propaganda and supervision in the lunchroom develop these habits.

Personnel Journal

Vol. 17, March 1939

*Democracy in industry. C. S. Slocombe.—p. 325.
*Job problems of older women. Anonymous.—p. 337.
*Advocating employee ratings. R. E. Dunford.—p. 352.

DEMOCRACY IN INDUSTRY. A description of methods used by Rowntree's Cocoa Works in York, England, to increase employee wages, security, and status through employee participation in decisions directly affecting them.

OLDER WOMEN. A concise article presenting unemployment of women over forty as due primarily to the women themselves rather than to employers or civilization.

EMPLOYEE RATINGS. A periodic, objective, and analytical rating of employees is as essential in modern business and industry as the scientific study of production processes. Objections to the rating scales do not remove their desirability. They must be tried in practical situations and their usefulness increased through practical experience.

Give 3 reasons why we cook our food. . . . *See page 4**

By what 6 methods do we cook food? . . . *See page 5**

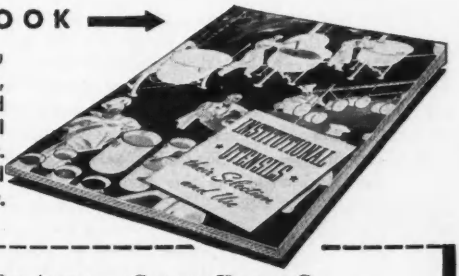
Must you place an Aluminum pan in water when baking soufflé? Why? . . . *See page 14**

What features of design should you look for when buying institutional utensils? . *See page 12**

What is the effect of thickness on the heat conductivity of Aluminum utensils? . *See page 11**

***SEND FOR THIS BOOK →**

To these and scores of other questions you will find the answers in the 24-page book, "Institutional Utensils, Their Selection and Use." It illustrates and explains uses of all commonly used Aluminum Cooking Utensils. An invaluable aid to dietitians, students and teachers. Send coupon for your free copy.



"Wear-Ever"
ALUMINUM
COOKING UTENSILS

THE ALUMINUM COOKING UTENSIL CO.
1306 "Wear-Ever" Building,
New Kensington, Pa.

I should like to have your book, "Institutional Utensils, Their Selection and Use."

Name_____

Address_____

City_____ State_____

(In writing advertisers, please mention the journal.)

NEWS NOTES

The American Dietetic Association was accepted for associate membership in the American Council on Education at the meeting of the Council's executive committee in May.

Appointment of Dietitians in the Medical Department of the Army. A bill "to authorize the appointment of female dietitians in the Medical Department of the Army" has been introduced into the Senate of the United States as S.1615, and referred to the Committee on Military Affairs. The bill authorizes the Secretary of War to provide for the appointment of such number of female dietitians as he may determine to be needed in the administration of laws providing for the hospitalization in Army hospitals of officers, warrant officers, and enlisted men of the Regular Army. Such appointments shall be made by the Surgeon General of the Army with the approval of the Secretary of War. The grades of dietitians shall be dietitian, head dietitian, and chief dietitian. Dietitians so appointed will rank respectively with nurses in the Army Nurse Corps; that is, the head dietitian will rank with the chief nurse, and the chief dietitian with directors in the Army Nurse Corps. They will be entitled to the same pay, longevity pay, subsistence and rental allowances, leaves of absence, travel allowances, medical attention, age- and service-retirement benefits, disability-retirement benefits, and other benefits as those to which members of the Army Nurse Corps who rank with them are entitled. While the final section of the bill authorizes the Secretary of War "to prescribe such rules and regulations, not inconsistent with the provisions of this Act, as he may find necessary for the purpose of carrying out the provisions of this Act," the bill as it stands apparently does not affect in any degree the Army dietitian who served during the World War unless she is in the service at present or is reappointed to the service.

Conference of Food Service Directors. Alma Bering of the Shephard and Enoch Pratt Hospital, Towson, publicity chairman for the 1939 conference, November 2–4, announces further details for this meeting. One feature will be a preconvention trip to the Naval Academy at Annapolis, followed by Friday morning trips to schools, commercial cafeterias, and industrial plants.

The tentative program is planned to cover discussions and studies on menu making, including the plate lunch, feeding children at school, educating the public in a commercial cafeteria to select food, lunch problems in rural and consolidated schools, the home economics teacher and the school lunch, a study of fish and fish products, cost control, changing the size of recipes and maintaining quality, equipment and layouts, financial reports, personnel, recent findings in nutrition and the aspects of nutritional factors which should be of concern to every person working with school children or the public in general, and other problems arising daily which affect the food administrator.

Members of the Maryland Dietetic Association, the Maryland Home Economics Association and the Maryland Restaurant Association, are assisting the directors of the Conference of Food Service Directors in planning the program.

The American Congress on Obstetrics and Gynecology will convene September 11–15 at Cleveland, Ohio. The subject "Nutritional Factors in Pregnancy" is to be discussed by Dr. Icie Macy Hoobler, Director of Research, Children's Fund of Michigan. Among other features of interest to dietitians will be the round table discussion on "The Toxemias of Pregnancy" and the program of the Section on Public Health in which papers are to be presented by physicians and nurses of national prominence.

American Gas Association. The National Home Service Conference of the association will be held at the Chapman Park Hotel in Los Angeles, August 22–26, under the direction of Gladys B. Price, chairman, Home Service Committee, American Gas Association. This is the third annual Conference, the other two having been held in Cleveland and Kansas City.

This Conference was designed to give home economics women engaged in home service in the gas industry an opportunity to get together for the solution of their problems and the promotion of gas appliances. However, it also has

What constitutes a well rounded breakfast?

For the normal child or adult we submit this simple breakfast containing an excellent balance of nutritional essentials:—two National Biscuit Shredded Wheat, with milk and fruit.

That is what we are recommending to the public in our advertising, as a result of a recent study of our product by a foremost authority on food chemistry.

As in practically all cases our product is eaten with milk, therefore the findings of this study included the nutrients of milk. In presenting a brief outline of these findings, we remind you that National Biscuit Shredded Wheat is natural unmilled whole wheat—nothing added to it, nothing taken out of it.

In our product and milk, the following essential nutrients are naturally present:

CARBOHYDRATES. Our product is 77% carbohydrates. Milk is 5%.

PROTEIN. Our product is 10% protein. Milk is over 3%.

IRON. Our product is an excellent source, with .0034%. Milk has .0002%.

CALCIUM. Our product has .04%. Milk has .12%.

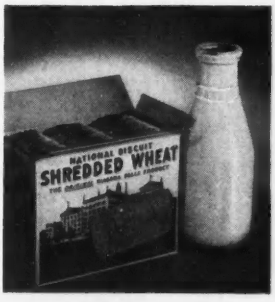
PHOSPHORUS. Our product has an excellent content, .42%. Milk has .09%.

VITAMIN B_1. There are approximately 120 Sherman-Chase units in two biscuits. In one cupful of milk there are approximately 77 Sherman-Chase units.

VITAMINS A AND G. Our product gives these vitamins in lesser quantities. Milk is rich in both of them.

ENERGY. In two biscuits and one cup of milk are approximately 370 calories.

Such a balance of nutritional essentials, we feel, makes our product a desirable dietary factor—a well rounded breakfast for normal children and adults. The delicious flavor of National Biscuit Shredded Wheat can be used as a factor to encourage increased intake of milk, which, surveys show, is far below the nutritionally desirable level. And our product, unlike highly milled cereals, goes further toward supplementing certain important and widespread nutritional needs.



Through more than forty years in millions of homes billions of breakfasts of National Biscuit Shredded Wheat have been enjoyed.

National Biscuit Company

(In writing advertisers, please mention the journal.)

been of value to home economics educators who are seeking knowledge of necessary training for those home economics students who wish to go into business. Women engaged in magazine editorial work or appliance laboratories are also interested in the most modern cooking and refrigeration appliances so they may give to their readers a better appreciation of their use.

During the Conference, actual demonstrations will be given on gas appliances and there will be discussions regarding advertising and public relations fields.

A cordial invitation is extended home economics teachers and dietitians to attend this Conference.

Sixth Pacific Science Congress. The tentative program for the July 24–August 12 meeting in San Francisco will cover four general topics: I. Program on Epidemiology of Diseases of the Pacific Basin; II. Program on Nutritional Problems of the Pacific Basin; III. Program on Industrial Hygiene; IV. Program on Health Education. Under the heading of nutritional problems the following topics will be discussed: Inadequacies of diets in common use by the Pacific populations and practical means of supplementing them. The occurrence, effects, and means of prevention of vitamin deficiencies. Public health problems related to defective nutrition. The relation of planned agriculture and industry to nutrition. Dr. Karl F. Meyer, Hooper Foundation for Medical Research, is general chairman for the section on nutrition. The congress meets under the auspices of the National Research Council.

New York Career Tours. Those who attend the New York World's Fair will want to include one or more of the trips that the New York Career Tours Committee have planned in the city for those interested in dietetics. The dietetic tours are among the more than 135 arranged for business and professional women. The American Dietetic Association is one of the 35 national, state and local business and professional women's sponsoring organizations, representing a membership of more than a quarter of a million. Career Tours are an official feature of the World's Fair program. Visits may be made to dietary departments of such hospitals as the New York-Cornell, Mt. Sinai and Montefiore, and health centers such as the Judson and the East Harlem Nursing and Health Service.

A variety of new and interesting problems confront the dietitian who supervises the dining rooms of schools, business organizations, stores and industrial plants. Tours will be arranged to show visitors what goes on behind the scenes in the dietetic work of such organizations as the American Telephone and Telegraph Company, Metropolitan Life Insurance Company, Pratt Institute, Teachers College, Evander Childs High School, and others.

Hotels provide another source of opportunity for dietitians. Through the comprehensive trips now being arranged, one may visit the kitchens of hotels such as the Waldorf-Astoria and the Pennsylvania. The restaurant of R. H. Macy & Company and the Schrafft chain will also be open to career tourists.

Other career tours will take visitors backstage in every field in which women work. Each visitor can observe how her own kind of work is handled in the largest city in the country, and can learn also from behind-the-scenes inspection what makes the machinery run in various organizations of which she may know little. Leading companies and executives in every field are cooperating to make the tours interesting and informative, and many institutions, ordinarily not open to the general public, will be accessible.

The number of tours is no more impressive than their coverage. Anyone with the time, the curiosity and the 50-cent registration fee can watch the wheels go round in everything from transportation to retailing, teaching to banking, marketing to medicine. Nurses, physicians, advertising and publicity women, musicians, artists, interior decorators, architects, educators, personnel directors, home economists, retailers, buyers, dietitians—every business or professional woman who comes to the fair—will have the opportunity to see how women in her own profession work in New York. Among the trips for which schedules have been completed is a tour of New York's markets which will interest consumers and home economists. They can see the Farmer's Market and a banana-ripening plant, West Washington Market where crates full of squawking fowl are piled high, the Auction Market, where butter, eggs, poultry and fruits are sold, and the Fulton Fish Market, where more than 500,000,000 pounds of fish are handled each year.

THROWING dishes away because they are shaded with film is as expensive as it is unnecessary. For the continued use of Wyandotte Keego will not only prevent the formation of brown or black stains, but will gradually clear up dishes already stained.

In many instances, dishes that were gray and stained come out white and invitingly new after only a few washings in a solution made with Wyandotte Keego.

Ask your Wyandotte Service Representative how to get the best results with Wyandotte Keego. Of course, there are other Wyandotte dish-washing compounds for use where varying conditions of hard or soft water warrant —Cleaner and Cleanser, Cherokee, Poma, H.D.C.

City newspapers are opening their plants to career tourists, and newspaper readers and workers alike can observe the inner workings of a metropolitan daily. Guides will take visitors not only through editorial offices but will also explain the composing rooms, press rooms and engraving rooms, the stereotype foundries, the libraries, and other aspects of the news-dissemination business. Laymen will get an impressive idea of how much more there is to running a paper than just collecting the news.

Women interested in communication—telephone, telegraph and radio—will be shown an extraordinary world in which mechanical ingenuity has made miracles commonplace. They can see long distance operating rooms, overseas switchboards, a control room where transatlantic calls are conditioned for ocean crossing, and will have explained to them how news pictures are sent over wires, processes by which telegrams are shot through pneumatic tubes under miles of city streets, and other marvels which we now take for granted.

Registration for career tours may be made at the New York City headquarters at the American Woman's Club, 353 West 57 Street, or at the Science and Education Building on the World's Fair grounds.

A Business-Consumer Relations Conference was held in Buffalo June 5–6 under the auspices of the National Association of Better Business Bureaus. Under the general session heading "What Educators Are Doing", Mrs. Kathryn Van Aken Burns, state leader of Home Economic Extension Work for Illinois, and assistant professor, University of Illinois, spoke on "Adult Consumer Education"; and Dr. Pauline Beery Mack, director of Home Economics Research, School of Education, and professor of Textile Chemistry, Pennsylvania State College, discussed "What Government Is Doing", a session topic, from the point of view of an educator.

Also among the speakers were Ada Lillian Bush, chief, Consumer Market Section, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce; Mrs. Harriet R. Howe, in charge of Consumer Education, American Home Economics Association; Mrs. Wilbur E. Fribley, president, Chicago Housewives' League; Mr. R. E. Freer, chairman, Federal Trade Commission; and Dr. Louise Stanley, chief, Bureau of Home Economics, U. S. Department of Agriculture

Metropolitan Life Insurance Company. The Welfare Division of this company has distributed a graphic report entitled "Lighting the Way to Health" which summarizes the more important activities in the public health field during the past 30 years. Thirty years ago the average length of life among policy holders was 47 years; today it is around 61 years. Thus in the course of one generation, 14 years have been added to the life span of policy holders, compared with a gain in longevity of about 8 years in the general population. The folder details the work of the visiting nurse in the home, and the company's field-men; the company's educational work in the school and in industry, and cooperation in the service of science.

The Home Economics Department of the Woman's College, University of North Carolina, held Open House April 28–29, at the Home Economics Building, Greensboro. The theme of the gathering was "Consumer Interests".

Greater New York HEWIBS met at dinner on May 4 with Mr. Greene, general manager, Better Business Bureau of New York, as the speaker.

Frozen Foods Locker Association, Oregon, Washington and Idaho. The second annual conference was held at Corvallis, Oregon, April 24–25, with Mr. C. M. Duff, president of the association, presiding. Among the speakers were Agnes Kolshorn, assistant professor of Foods and Nutrition, Oregon State College, "Cooking Methods that Assure Quality Meats", —Lecture and Demonstration; Mildred Boggs, food research specialist, College of Home Economics, Washington State College, Pullman, "Retaining Quality by Proper Cooking of Vegetables from Locker Storage"; and Margaret L. Fincke, assistant professor of Foods and Nutrition, Oregon State College, "What Happens to Vitamins and Minerals When Foods are Stored in Lockers". Other papers presented concerned the technical aspects of preserving and marketing frozen foods.

Training in Institution Management. The School of Business, University of Chicago, announces a combined work and study program

Throw Away the DOLLAR BLINDERS

● Are limited budgets and false ideas of economy resulting in insufficient milk products in your institutional diets?

Two-thirds of the food value of milk is below the cream line. The water-soluble vitamins B and G and all of the non-fat solids of fresh, sweet milk: minerals, proteins and lactose, are preserved in natural form in dry milk solids.

Dry milk solids is the product resulting from the removal of fat and water from milk. It contains not over 1½% butterfat and not over 5% moisture. It offers an inexpensive and convenient way to improve the flavor and increase the nutritive value of foods in which fluid milk is not or cannot be used.

Try dry milk solids in your dietary program and learn its many advantages. Reputable manufacturers can supply you with the highest grade product of uniform quality.

AMERICAN DRY MILK INSTITUTE, Inc.
221 N. La Salle St., Chicago

SUGAR-FREE ICE CREAM for Sugar Restricted Menus

Patients on diabetic or reducing diets can make their favorite summer dessert at home —with CELLU FREEZETTE, the easy-to-prepare ice cream powder mix. Simply mix it with cream and freeze. Only food value is that of the cream used. Chocolate or vanilla flavor.

Send coupon for a free trial can of Cellu Freezette and the catalog of Cellu foods, which will help you in planning special diet menus.

CELLU LOW CARBOHYDRATE *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1520 W. Van Buren St. CHICAGO Illinois

FREE SAMPLE

Send sample of Freezette and Cellu catalog

Name .....

Address .....

City ..... State .....

PRONTO

REG. TRADE MARK

THE POSITIVE ALUMINUM CLEANER

Scummy, greasy, discolored aluminumware is dirty aluminumware; it is unsanitary, unhealthy, objectionable and unpardonable—because PRONTO prevents such conditions.

PRONTO removes all bacteria breeding films, scum, grease deposits, discolorations, fruit and acid stains and at the same time restores your aluminumware like new, with that clean, sanitary, factory finish of high luster and polish, thus giving you hygienically clean and sanitary aluminumware.

PRONTO is used and endorsed by "WEAR-EVER"; used by thousands of hotels and hospitals, and U. S. Government Institutions from coast to coast.
Prove to yourself that there is no other product like PRONTO. Send for special trial offer guaranteed to solve your aluminumware cleaning problems.

Cut Coupon and Mail To Us Now—This Offer Is Limited

Wilson Chemical Company
Rye, New Hampshire
Send us delivery charges prepaid trial size can ten gallons of PRONTO. We agree to use PRONTO for ten days after delivery according to directions and if PRONTO does not clean aluminumware you agree to take back unused portion and there is to be no charge to us for amount used. If PRONTO does clean aluminumware we agree to send you remittance at your special trial offer price of one dollar, eighty-seven one-half cents per gallon. We agree to notify you within ten days after delivery if PRONTO does not clean aluminumware.

NAME ..... BY .....
Institution
CITY .....
STATE .....

(In writing advertisers, please mention the journal.)

designed to train persons for administrative, teaching and research positions. The various units of the course are supervised by directors who are members of the School of Business faculty. The object of the course is to train persons for work in industrial concerns which maintain a food service for their employees, as well as for various agencies of philanthropic, governmental, or private enterprise. A trained institution person may also enter architectural and engineering fields as a consultant in the design and installation of kitchen and dining room equipment, and in the field of purchasing food, equipment and furnishings. The courses are open to upper classmen and graduate students who have had or are taking certain related courses in the science of food and business administration. Home economics students desiring special training in institutional work and "who wish to meet the American Dietetic Association requirements" are also eligible.

St. Anne's Hospital, Chicago. The Ancilla Domini Sisters held a meeting for the sisters engaged in food service at the hospital May 5–6. On May 5 after the convocation and greetings by the Rev. J. J. Haugh, the following program was presented: "The Necessity of Serving Simple and Tasty Food to Patients and Personnel", Mary Edna Golder; "Demonstration and Lecture", A. Quinn, General Foods Corporation; "Demonstration and Motion Pictures", Mr. Swanson, Borden-Wieland Dairy; "Demonstration and Lecture", Virginia Porter, Libby, McNeil and Libby; "Demonstration of Meat Cutting and Cookery", Mildred Batz; and "Prof. Quiz's Hour", Sister Renalda, St. Anne's.

On May 6 the program was continued as follows: "Clinical Dietetic Discussion Hour", Dr. Wm. J. Quigley; "Demonstration and Lecture", Lida Jamison, Chicago Dietetic Supply House; "Demonstration and Lecture," Miss Christopherson, Kraft-Phoenix Cheese Co.; "Meat Cutting and Ice Cream Making", Ernest Hohnstein; and "Current and Historical Motion Pictures," Mr. Herzog, Scanlon-Morris Co.

Anna dePlanter Bowes is a co-author with Dr. Douglas P. Murphy of "Food Habits of Mothers of Congenitally Malformed Children" which appeared in the March 1939 issue of the *American Journal of Obstetrics and Gynecology*. Mrs. Bowes recently prepared a folder for the Philadelphia Child Health Week Committee in which she concisely and clearly enumerated the essential points in good nutrition for children.

Connecticut Dietetic Association held its annual meeting on April 27 at the Sterling Hall of Medicine, Yale University. The morning session consisted of a panel discussion regarding community nutrition, with Elizabeth Nickerson, director and nutritionist, Bureau of Public Health Instruction, presiding, and the following participating: A. E. Berning, nutritionist, Hartford Visiting Nurse Association; M. A. Kennedy, nutritionist, Waterbury Visiting Nurse Association; Mrs. F. L. White, nutritionist, Middlesex Chapter of American Red Cross; and Mrs. F. M. Coles, nutritionist, New Haven Council of Social Agencies.

Luncheon was held at the Young Women's Christian Association and the program was continued in the afternoon with the following speakers: Mr. James A. Hamilton, superintendent, New Haven Hospital, "Some Problems in Administration"; S. Margaret Gillam, head dietitian, New York Hospital, "Efficient Kitchen Arrangement"; Mr. Waldren, manager, Quinnipiack Club, New Haven, "Food Cost Accounting".

Tea was served in the Sterling Dormitory where interesting china, silver, and canned food exhibits were on display. The day's program ended with a dinner at the Taft Hotel. Mrs. Buela Becker Marble, president-elect of the American Dietetic Association was the speaker. She talked of the marked progress that has been made in the field of nutrition and emphasized that unless a definite effort was made to read current literature one could not hope to keep abreast of the times. She also spoke of the serious importance of strong and active state organizations.

The Misses Coker and Green of the New Haven Hospital were in charge of the tea, dinner and luncheon arrangements.

Indiana Dietetic Association. The outstanding feature of this year's program was the presence of Anna M. Tracy, national president, at the February meeting of the association. A banquet in honor of Miss Tracy, held at the Riley Hospital, gave many members an opportunity to meet their president. Another guest at this meeting was Adeline Wood, national in-

ALICE IN BORDENLAND

"It's a pipe!" grunted the busy White Foreman.
"It looks very difficult to me," said Alice.
"It is," admitted the White Foreman. "But it's a pipe, too—so down it comes!"

"But," asked Alice, "*why* must all these beautiful shiny pipes come down?"

"So that I can put them all *up* again in the morning," answered the White Foreman, busy as a beaver. In fact, Alice thought he looked rather *like* a beaver.

"That's silly!" she exclaimed.

"My dear, Borden's *experts* and *scientists* don't think it's silly," the White Foreman said, stopping patiently to explain. "One of the many things they insist upon is that we take down every pipe in the place *every day*—and *sterilize* it. Why, we spend about as much time getting these pipes sterilized as we do *using* them."

Alice knew what *sterilize* meant. So she said, "Goodness, then *this* place must be the cleanest in the whole world!"

"I wouldn't say that," said the White Foreman, turning back to his pipes. "You see, *every* place that handles Borden's milk or cheese or Dryco or Klim or *any other* Borden milk product has to live up to these Borden rules, too."

• • •

Borden experts, scientists, and laboratory workers exercise an eternal vigilance over the quality and purity of all Borden Products, from the farm to the placing of the product in the consumer's hands. It is one reason why "Borden" is such a reassuring name on *any* milk product that you may prescribe.

The Borden Company
350 MADISON AVENUE
NEW YORK CITY

spector of Approved Training Courses for Student Dietitians. Lute Troutt, chairman of the state Professional Education Section, had charge of the meeting. Miss Wood spoke briefly of her work as inspector. Miss Tracy spoke on "The Status of the National Association," and introduced her talk with a quiz designed especially to test the members' knowledge of A. D. A. history. The meeting was attended by a group of prospective dietitians (senior home economics students) from Purdue and DePauw Universities.

Margaret Edwards, national vice-president, visited the Dietary Department of the Indiana University Medical Center on her return trip to Greensboro after attending the Executive Board meeting in Chicago.

Grace McMahon, graduate of Indiana University Medical Center training course, and recent staff member at Ball Memorial Hospital, Muncie, has jointed the dietary staff of Presbyterian Hospital, New York City.

Adela Grueber, formerly at the Lutheran Hospital, Fort Wayne, is now at Ormsby Hall, Appleton, Wisconsin. Delight Smith is the new dietitian at the Fort Wayne Hospital.

News from Indiana University Medical Center includes the following items: Helen Schuller, administrative dietitian and president of the state association, became Mrs. Jack Miller on New Year's Eve. Eleanor Irwin, formerly dietitian of the Medical School Cafeteria, is now attached to the Dietary Department of the U. S. Marine Hospital, Ellis Island, New York City. Grace Washburn Crook, research dietitian, is now living in Wauwatosa, Wisconsin. Frieda Meyer, successor to Ruth Darby who is on leave of absence doing research work in the Philippine Islands, has been awarded a graduate assistantship at Cornell University beginning in September 1939. Lute Troutt and Estelle Nesbitt, state nutritionist of Indiana, were honor guests at the state meeting of the Missouri Dietetic Association. Miss Troutt spoke on "The Advancement of Dietetics as a Profession" and Miss Nesbitt discussed the work of the state nutritionist.

The state membership drive, conducted by the president and secretary, this year resulted in twenty-five new members. Five persons transferred to other state groups.

Members of the Purdue University Home Economics Department were hostesses to the Indiana Dietetic Association for the April meeting. The meeting was planned by Dr. Cecilia Schuck, chairman, Diet Therapy Section. A delicious luncheon was prepared and served by students in the department. Progress in the field of food preparation was discussed by Ruth Jordan and Dr. Gertrude Sunderlin. Dr. Margaret Johnson spoke briefly on the nutritive value of the soy bean and its importance in human nutrition. Following the talks, the members were conducted on a tour of the campus.

Kansas Dietetic Association held its second annual meeting March 24 in Kansas City, Kansas. Kathryn Tissue, state president, presided at the general session in the morning when Dr. C. F. Nelson, professor of biochemistry at the University of Kansas, gave a talk on "The Properties and Actions of Vitamins" and Dr. D. H. Miller, chief of the medical service at the Veterans Hospital in Wichita, discussed "Protamine Zinc Insulin." Angeline Phillips, secretary of the American Dietetic Association, brought greetings to the members of the state organization from the national officers and then spoke on "Food Service in a State University Hospital." This was followed by special reports from chairmen of the various sections. Hermina Zipple reported for the Administrative Section, Dillia Steiner for the Professional Education Section, and Jennie F. Schweiter for the Diet Therapy Section. A short business meeting preceded the luncheon which was held in the dining hall of the Wyandotte High School. Frances Janda presided at the luncheon and furnished a birthday cake in honor of the first anniversary of the organization. This meeting was held with the State Health Section of the Kansas State Home Economics Association. Dr. A. J. Rittenmaier of Kansas City was the speaker and discussed "The Dietitian and Her Job." At the close of the meeting the birthday cake was cut and served.

Hannah Murphy presided at the afternoon session and introduced Dr. Margaret Justin, dean of home economics at Kansas State College, who spoke on "Foreign Food Habits", particularly those of the Chinese, Japanese, and East Indians. This was followed by a discussion, "Significance of Jewish Foods" by Rabbi Gershon of Kansas City. The afternoon meeting was concluded with a short talk on "Research in Nutrition" by Mrs. Katharine Ansley, executive secretary of the American Home Economics As-

Jullicum

REG. U.S. PAT. OFF.

"JULLICUM" on the menu means a rennet-milk dessert that is pleasing to eat, delicious in flavor, satisfying; it also reminds Dietitians and Nutritionists of Quick Mixing, Low Cost, Firmness for better handling.

When digestibility is a major factor in nutrition, try "JULLICUM"; its Food Value is, approximately, 1 Calorie to 1 Gram. Four ounce serving, approximately 125 Grams, equals, approximately, 125 Calories consisting of

Carbohydrate	*Fat*	*Protein*
68.	43.2	14.4

Many natural flavors give variety in serving, sugar content may be controlled for special diet.

Almond — Butterscotch
Caramel — Chocolate
Coffee — Orange
Raspberry — Vanilla
Sherry Wine
Plain Unflavored

One Tablespoon Jullicum congeals and flavors 1 pint milk; its cost, approximately, 4 CENTS.
Price $1.25 the pint.

Express or freight prepaid

SAM'L B. KIRK
1724 Cayuga St. Philadelphia, Pa.

Plain Jullicum, formerly Shinn-Kirk Liquid Rennet, is the oldest Rennet product in America; it has been sold by the Drug and Fancy Grocery trades since 1857.

HAWAIIANS KNOW HOW TO CAST THEIR NETS TO BRING IN THE MOST FISH—A STAPLE IN ISLAND DIET

Islanders Know How

Every Islander (and many a Mainlander!) knows what brings him the most beverage pleasure. Dole Pineapple Juice from Hawaii has long been a favorite and daily part of Island diet. Its golden goodness and buoyant tang revive even the most wilted spirits.

WHY DOLE PINEAPPLE JUICE IS GOOD FOR YOU

Dole Pineapple Juice is pressed from fully ripe fruit—

It's natural and unsweetened—

It's easily digested by children as well as adults—

It's rich in natural fruit energy—

Copyright 1939, by Hawaiian Pineapple Co., Ltd.

DOLE PINEAPPLE JUICE FROM HAWAII

sociation, after which the group visited the Menorah Hospital in Kansas City, Missouri.

Kentucky Dietetic Association. The annual meeting was held in Lexington March 31–April 1. The following officers were elected: president, Mrs. Nellie E. Bandeen, Shelbyville; president-elect, Marie Jenkins, City Hospital, Louisville; secretary, Emily Bennett, Owensboro City Hospital; treasurer, Mrs. Lee Amidon, 2000 South 2nd St., Louisville; vice-president, Ruth Butler, Illinois Central Hospital, Paducah. The March 31 morning session opened with a welcoming address by Statie Erikson, president of the association and head, Department of Home Economics, University of Kentucky; and a round table discussion, "Looking Ahead", with Florence Imlay, Kentucky Agricultural Experiment Station, Lexington, presiding.

At luncheon at the Phoenix Hotel, Pearl Haak, Kentucky Agricultural Experiment Station, presiding, greetings were extended by Statie Erikson, Irene Randolph, Ruth Butler, Sunshine Colley and Mary Hood Gillespie, representing various sections of the state.

Emily Bennett presided at the afternoon session with the following program: "Don't Alkalize", Robert Baker, Department of Chemistry, University of Kentucky; and "Nicotinic Acid and Pellagra," Dr. William B. Bean, Cincinnati General Hospital.

The annual banquet was held at the Phoenix Hotel with Statie Erikson presiding, and Dr. Margaret Ratliff, Department of Psychology, University of Kentucky, speaking on "There Are Two of You—Dr. Jekyl and Mr. Hyde".

At the April 1 session, Edith G. Grundmeir, University of Kentucky, presiding, the following program was presented: "School Lunchrooms and Cafeterias", Mary Hemmersbaugh, supervisor, Division of Lunchrooms, Board of Education, Cleveland; "Human Requirements of Vitamins", Ruth Boyden, Department of Home Economics, University of Kentucky; "Nature and Prevention of Nutritional Diseases in the United States", Dr. W. H. Sebrell, surgeon in charge of Nutrition Investigations, United States Public Health Service, Washington, D. C.

The 1940 meeting will be held in Louisville.

Irene Randolph, dietitian, Kentucky Baptist Hospital, Louisville, has accepted the position of assistant dietitian at the Indianapolis City Hospital. Miss Randolph is president of the Louisville Dietetic Association.

Dr. Statie Erikson was elected president of the Kentucky Home Economics Association at the April meeting.

Louisiana Dietetic Association. Dr. R. H. Turner of the Tulane University School of Medicine spoke to the association on February 14, on "Recent Research on Vitamins".

On March 15 the dietitians at Charity Hospital gave a dinner in honor of Mary A. Foley, consultant dietitian at the Mayo Clinic, Rochester, Minnesota. Following the dinner Miss Foley discussed the Wilder method used in treating diabetic patients at the Mayo Clinic. Dr. Julius Wilson of the Tulane University School of Medicine spoke on "Diet in Tuberculosis".

On April 11 Dr. H. H. Beard, professor of biochemistry at the Louisiana State University School of Medicine spoke at a monthly meeting of the association on "The Nutrition and Metabolism of the Cancer Cell".

Massachusetts Dietetic Association. Dr. John Talbott, assistant physician, Massachusetts General Hospital, and associate in medicine, Harvard Medical School, discussed "Certain Aspects of Mineral Metabolism" at the April meeting of the association.

A very successful joint meeting of the Massachusetts Dietetic Association and the New England Home Economics Association was held at the Peter Bent Brigham amphitheatre on April 27. Dr. Frank G. Boudreau, executive director of the Milbank Memorial Fund, New York City, and formerly of the League of Nations Committee, Geneva, spoke on "Better Nutrition—Pathway to World Economic Cooperation". The meeting was preceded by a dinner in Dr. Boudreau's honor to which representatives of the two associations and local leaders in the field of public health were invited.

Beula Becker Marble and Maniza Moore attended the New York Dietetic Association meeting at Saratoga Springs in May. Mrs. Marble was also present at the annual meetings of the Connecticut, Massachusetts, District of Columbia, Maryland, Pennsylvania, Tennessee, and Texas associations recently.

Dorothy McLaughlin has resigned her position

Yes, Doctor, we do talk to your patients...

and we tell them facts which help you and help us.

Certain things about you can best be said by us—such as the importance of medical care to the mother and child, the need for competent medical advice rather than adherence to rule of thumb methods and similar statements. A recent advertisement in This Week Magazine Section affords one of many examples. It stated:

"Your doctor knows about the new Gerber's Cereal Food and what it can do for your baby. Talk with him about it as he is the one best qualified to advise you concerning every phase of your baby's welfare."

Another way in which we try to benefit both you and ourselves is with the new booklet "Foods for Baby and Mealtime Psychology" by Dr. Lillian B. Storms. This contains information which aids mothers in carrying out their physicians' instructions with more understanding. It tells mothers *how* to feed baby—the *what* and *when* and *how much* it leaves to doctors. For complimentary copies to distribute to your patients please write us.

Complimentary Samples of the New Gerber's Cereal Food

GERBER PRODUCTS, CO.,
Dept. 237, Fremont, Mich.

Please send, without charge, samples of the new Gerber's Dry Pre-Cooked Cereal Food and detailed information including analysis file card.

NAME_____

ADDRESS_____ STATE_____

as assistant dietitian at the Lynn Hospital. She plans to do graduate work in education.

Mercia Scott, an assistant dietitian at the Jackson Memorial Hospital, Florida, for the past year and a graduate of the student training course at the Massachusetts General Hospital, has joined the staff of the New England Baptist Hospital.

Genevieve Roper, assistant dietitian at the Deaconess Hospital, has resigned to be married to Dr. John Coons, chief of staff, Robert Brigham Hospital.

Fredericka Beinert, Massachusetts Department of Public Health, is conducting a demonstration of nutrition service in four small towns in Plymouth County.

Miriam Black, nutritionist in Lexington, is developing a community program in Arlington, sponsored by the Red Cross.

Frances Stern recently participated in a round table discussion on "Child Health and the Public Health" at the spring meeting of the Massachusetts Public Health Association.

Kathleen Fisher has been appointed to the staff of the Deaconess Hospital.

Gertrude Green, who has been at the New Haven Hospital, has accepted a position as therapeutic dietitian at the Peter Bent Brigham Hospital.

Ruth Button, a graduate of Syracuse University and the Peter Bent Brigham student training course, has been appointed therapeutic dietitian at the New England Baptist Hospital.

Over 600 health workers attended the New England Health Education Institute at the Massachusetts Institute of Technology on April 21–22. Elizabeth Nickerson, Connecticut Health Department, and Dorothea Nicoll, Massachusetts Department of Public Health, were in charge of exhibits. Gertrude T. Spitz, Mary Pfaffman, and Ruth L. White were on the Arrangements Committee of which Charlotte Raymond was chairman.

Many association members attended the annual meeting of the Massachusetts Home Economics Association in April at Massachusetts State College. Dr. Lydia Roberts discussed "The Part of the Home Economics Teacher in the Public Health Program".

Nebraska Dietetic Association met at the Blackstone Hotel, Omaha, March 23, participating in the annual conferences of the Nebraska Hospital Assembly and allied groups. Among the organizations included in this meeting were the Association of Hospital Pharmacists, Association of Hospital Record Librarians and Nebraska State Association of Nurse Anesthetists. After an address of welcome by Myrtle Donahoo, president of the Nebraska Dietetic Association and acting chairman, the following program was presented: Dr. Ruth Leverton, Department of Research, University of Nebraska, "Recent Research in Human Nutrition"; and Mrs. Gladys G. Smits, R.N., superintendent of Lincoln General Hospital, "The Dietitian's Contribution to the Small Hospital". Margaret Sturat, who attended the post-graduate course given in Minneapolis, gave an informal report of the program for this course.

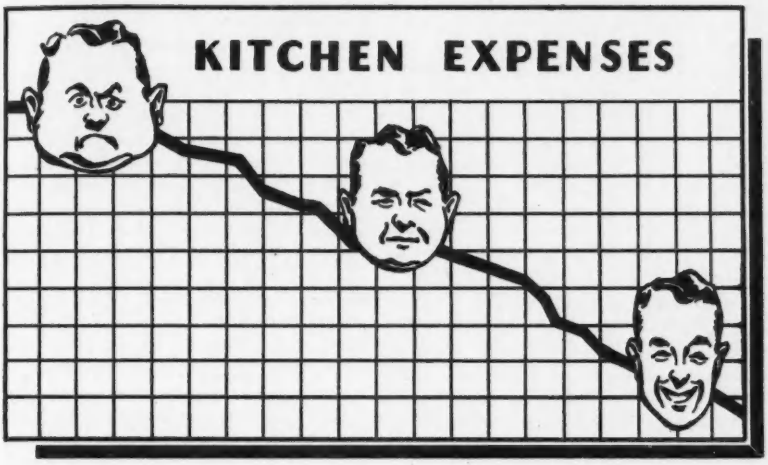
Some of the topics discussed at the round table program were: advantages in presenting private patients with a printed menu; use of frozen vegetables; shall food be purchased by the purchasing agent or dietitian; physical examinations for cooks and waitresses; should personnel be charged for special diets; and the question of combining dietetics and housekeeping in small hospitals.

Greater New York Dietetic Association. The Diet Therapy meeting was held at the Red Cross Building on April 24 with Dr. Paul Chadbourne Eschweiler, senior physician, Metabolic Clinic, Methodist Hospital, Brooklyn, speaking on "Diet Control". A discussion followed on "Methods of Handling Diabetic Diets" in which Louise Stephenson, Presbyterian Hospital, and Ida Wides, Mt. Sinai Hospital, participated.

Lillian Emoff, chairman, and members of the Student Dietitians' Club of New York, were the guests of the "Bakers of Bond Bread" at their Manhattan Plant, New York City, on April 28. Lenna F. Cooper, chief dietitian, Montefiore Hospital, New York City, accompanied the group, and Inez Somers, home economist for General Baking Company, received the guests. At the close of the inspection trip, refreshments were served.

New York (State) Dietetic Association. The annual meeting was held at Saratoga Spa, New York State Reservation at Saratoga Springs, May 4–5. Headquarters were in the Administration Building on the Reservation, and at the New Worden Hotel in Saratoga Springs. An

HOW TO LOWER KITCHEN COSTS



FIXT PREPARED FLOURS SPELL ECONOMY —WITHOUT SACRIFICING DIETARY QUALITY

• Perhaps the feature of FIXT MIXES that will please you most is this—all the ingredients in FIXT are of the excellent quality that you yourself would select. You can figure on the uniform dietary qualities of FIXT MIXES always. In addition, you save money. FIXT cost is low . . . actually costs you less than if you bought the ingredients separately. Kitchen time is saved. With FIXT MIXES all you do is *add water and bake*. All the ingredients, even the eggs, are ready mixed to the proper proportions by the world's largest makers of prepared flours. No waste. No fuss. Even low cost kitchen help can bake delicious good things with FIXT MIXES . . . right from the first try. There are 15 FIXT MIXES . . . to make Muffins, Biscuits, Waffles, Griddle Cakes, Devil's Food Cake, Yellow Cake, etc. Ask your supplier about FIXT MIXES. Or write us for FREE booklet "76 FIXT Recipes."

FIXT *fully prepared* **FLOUR MIXES** JUST ADD WATER AND BAKE

excellent program was arranged under the direction of Mame Tanner Porter, nutritionist for the Department of Social Welfare of the State of New York. At the opening session Lola Heuerman, Syracuse Memorial Hospital, presided with the following program: "Address of Welcome", C. B. Elmore, superintendent, Saratoga Springs Authority; "The Relation of the Natural Carbonated Mineral Waters to General Nutrition and Dietary Deficiencies", Dr. Walter S. McClellan, Medical Director, Saratoga Springs Commission; "The Importance of Dietary Management in Surgery of the Gastro-Intestinal Tract", Dr. Stuart Welch, Albany Hospital.

At the welcoming luncheon, Jessie Cole presiding, greetings were extended by Edith H. MacArthur, director, Department of Home Economics, Skidmore College, followed by a paper on "Educating the Modern Woman" by Kathryn H. Starbuck, secretary to Skidmore College.

At the afternoon session with Geraldine Thompson, Buffalo City Hospital, presiding, Katharine W. Harris, head of Department of Institution Management, Cornell University, spoke on "Some Considerations in the Selection of Fabricated Equipment for the Institution Kitchen". Following an address by Ruth Atwater, Home Economics Division, National Canners Association, Washington, D.C., a report of the Administrative Section was presented at the annual business meeting.

Beula Becker Marble, affiliation chairman, and president-elect, American Dietetic Association, and Dr. Henry T. Moore, president, Skidmore College, spoke at the annual banquet with Effie May Winger presiding. During the dinner a musical program was presented by Skidmore College students.

On May 5 the meeting opened with a round table breakfast followed by a session of the Professional Education Section with Dr. Ann Bourquin of Syracuse University, presiding. Section reports and a paper on "The Survey of the Dietitian and Her Job" by S. Margaret Gillam, director, Department of Nutrition, New York Hospital, were presented.

At the luncheon meeting with Henderika Rynbergen, vice-president, presiding, greetings were extended by Mrs. Charles B. Knox, president, Knox Gelatine Company. Dr. Elizabeth M. Gardiner, director, Division Maternity, Infancy and Child Hygiene, New York State Department of Health, spoke on "Nutrition Education in Relation to the Child Health Program".

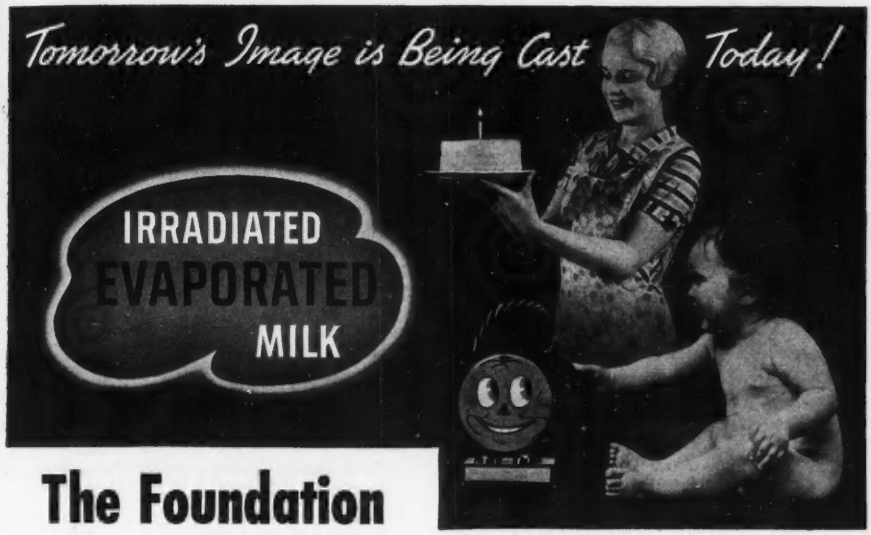
In the afternoon Jean Sackrider, Brooklyn Bureau of Charities, presided at the session of the Community Education Section, when the following program was presented: "International Work on Nutrition and its Implications in the Fields of Public Health and Nutrition", by Dr. Frank G. Boudreau, executive director, Milbank Memorial Fund, New York City; and "Planning the Day's Diet for Vitamin Content", by Hazel E. Munsell, senior nutrition chemist, Foods and Nutrition Division, U. S. Bureau of Home Economics.

The meeting closed with a tea given at Skidmore College, with members of the Home Economics Department as hostesses.

The following officers were elected: president, Effie May Winger; vice-president, Henderika J. Rynbergen; secretary, Mrs. Ethel Lewis Marth; treasurer, Genevieve Souder Moyer; member of the House of Delegates, Blanche Bohach; nominating committee, Marion Burnes, Doris Tisdale, Ernestine Elmendorf, Dorothea Florence Behm, Mary P. McManus, and chairman, Constance C. Hart.

North Carolina Dietetic Association. The first issue of the association's *Bulletin* has made its appearance, with the vice-president of the association, Cora E. Gray, as the editor.

The annual meeting was held in Durham, April 21–22. Eloyse S. Milner presided at the Community Education Section meeting when the following papers were presented: "Nutrition Education and the School Lunch", Cleone Boyd; "Reducing Diets", Flora White Edwards; "Food Fads and Fallacies", Dr. Victoria Carlsson. A Diet Therapy Section meeting followed with Ada E. Howe presiding. A number of questions had been formulated by dietitians of the state and were presented for discussion by the following group of doctors of the Duke University Medical School; Drs. D. T. Smith, W. C. Davison, W. A. Perlzweig, E. L. Person, W. M. Nicholson, and E. S. Orgain. Some of the questions propounded were: "What is the explanation of nutritional edema and its prevalence in the South?"; "What principles determine the fat and carbohydrate proportions of diabetic diets in adults?"; "What bearing has the high vitamin diet on the cases of pulmonary tuberculosis and its complications?"; "What supplements and



The Foundation

for Safe, Happy Motherhood is Laid in Infancy

The importance of a properly developed skeletal structure in the mother-to-be is recognized by every physician. Safe, easy delivery requires that she have properly formed bones, particularly of the pelvis. For normal, skeletal development, adequate intake of calcium, phosphorus, and Vitamin D during infancy and the growing years is indispensable.

Again, during pregnancy and lactation the mother needs increased supplies of these three nutrients to provide for her baby, and to aid in safeguarding her own teeth and bones.

Milk is the richest, natural food source of calcium and phosphorus. In Irradiated Evaporated Milk these minerals are available with Vitamin D for their efficient utilization. This excellent product contains the essential nutrients which milk is relied upon to supply, and is enriched with extra Vitamin D by irradiation by the Steenbock process.

Irradiated Evaporated Milk is good rich cow's milk, *doubly concentrated, homogenized,* and heated—therefore more readily digested. It is absolutely *safe,* because *sterilized.* Always *uniform* in composition, it simplifies infant feeding in the home and on vacation trips. It is available everywhere. It is economical. Irradiation has added nothing to its low cost.

Many of the best known brands of Evaporated Milk are Irradiated, enriched with Vitamin D, by the Steenbock process. Yet this has not increased the cost of Evaporated Milk. Irradiated Evaporated Milk can be obtained in every community. Through scrupulous and scientific control by the manufacturer, and by frequent tests of both open market and factory samples, uniformity of Vitamin D potency is assured.

LOOK FOR THE WORD IRRADIATED ON EVAPORATED MILK LABELS

WISCONSIN ALUMNI RESEARCH FOUNDATION
MADISON, WISCONSIN

Send for FREE Booklets TODAY!

Please send me the two booklets—"Infant Feeding with Irradiated Evaporated Milk" and "The Story of Irradiated Evaporated Milk."

JADA 639

Name .....

Address .....

City ..... *State* .....

(In writing advertisers, please mention the journal.)

what type of diet are indicated for the pellagrin being treated with nicotinic acid?" A buffet supper and business meeting concluded the first day's sessions.

On the following day the state association attended the Centennial Celebration of Duke University, at which addresses were given by Dr. Edouard Benes, former president of Czechoslovakia, and Dr. John H. Finley, editor of the New York *Times*. Margaret P. Baker presided at the Professional Education Section meeting in the afternoon when the following subject was discussed: "Why are there Failures on State Board Examinations for Nurses?" The formal sessions concluded with an Administration Section meeting with Mabel N. Swanson presiding, and the following papers: "The General Aspects of Food Cost Control", Lucille McMackin; "Necessary Records for Food Cost Control", Louise Dickinson; "Recipe Testing, Standardization and Pricing as a Means of Food Cost Control", Helen Dennis; and "Control of Waste as a Means of Food Cost Control", Mary E. Whitehead.

To date the state association numbers 41, the membership being limited due to the fact that those accepted must also be members of the American Dietetic Association. Judged by the reports in the *Bulletin*, this state association is actively engaged in cooperating with the national association. Among the interesting reports of work done by the state sections is that of the Community Education Section. During the year Mrs. Flora White Edwards prepared an exhibit concerning extravagant claims for food and diets. Her posters offer constructive and positive information in contrast to the fallacious statements heard over the radio and occasionally found in the press. It is planned to make this exhibit available to hospital, medical, parent-teacher and other groups. The Radio Committee has prepared radio scripts and broadcasts have been planned for presentation over local stations. The radio program is intended to inform the public concerning the work of the American Dietetic Association, the state dietetic association, and the training and activities of dietitians in schools, institutions and hospitals of North Carolina.

Philadelphia Dietetic Association enjoyed a very fine program at Children's Hospital on March 14 with Claire Foster, research nutritionist, as hostess. The leader of the program which consisted of a series of papers on nutrition research at the Children's Hospital was Joseph Stokes, Jr., M.D., associate physician-in-chief of The Children's Hospital. The program consisted of the following 10-minute talks: "Vitamin B and D Studies", Harold Stevens, Ph.D.; "Soft Curd Milk", Irving J. Wolman, M.D.; "Salt Metabolism", Mitchell I. Rubin, M.D.; "Vitamin C Studies", Milton Rapoport, M.D.; "Chemical Analysis of Foodstuffs", Dorothy W. Asher, M.D.; "Out-Patient Nutrition Studies", Theresa S. Rhoads, M.D.; and "Diet and Resistance to Infection", Claire Foster, B.S. A bibliography of the subjects discussed was presented to each member. Tours were conducted through the new research laboratories.

Field trips to the new vocational schools and inspection of the kitchens and equipment were included in the spring program.

On April 11, B. B. Vincent Lyon, M.D., assistant physician in medicine, Jefferson Medical College Hospital, presented "New Dietary Trends in Gall Bladder Disease". An excellent exhibit on Diet in Gall Bladder Disease was set up by the Dietary Department of Jefferson Hospital with Martha E. Walker, chief dietitian, in charge.

On April 25 the annual dinner was held at the Penn Athletic Club with Henriette Pribnow presiding. One of the founders of the association, Helen E. Gilson, was guest of honor. Other guests were Mrs. J. Bertram Hervey, president, Philadelphia Federation of Women's Clubs and Allied Organizations; Elizabeth Cole, president, Greater New York Dietetic Association; Emily Haydock, president, the Philadelphia Home Economics Association; Alma Bering, president, Maryland Dietetic Association; Royna Wilcox, president, Scranton Dietetic Association; Pearl MacDonald, president, Delaware Dietetic Association. The speaker of the evening, Mrs. Mary Pascoe Huddleson, editor, JOURNAL of the American Dietetic Association, discussed "Here and There in Nutritional History".

Officers for the year 1939–1940 are as follows: president, Mrs. Anna dePlanter Bowes, director, Nutrition Education, Philadelphia Child Health Society; vice-president, Elda Robb, Ph.D., assistant professor, Home Economics, Temple University; secretary, Marjorie Euwer, director, Dietary Department, University Hospital; treasurer, Miriam E. Gaige, staff dietitian

Horlick's
for Infant Feeding

WHERE artificial feeding is necessary, you will find that Horlick's, the Original Malted Milk, offers the advantages of soft, low tension curds, and easily assimilated carbohydrates.

Horlick's provides nutriment extracted from wheat and malted barley, enzyme hydrolized and then combined with full-cream milk from tuberculin-tested herds in such a manner as to modify the milk. Horlick's contains calcium and phosphorous, and is a good to excellent source of vitamins A, B and G. Materials are processed in vacuum at controlled low temperatures to protect the natural vitamins of milk and grain.

Horlick's is delicious, easily digested and nutritious. Write (on your professional stationery) to Horlick's Malted Milk Corp., Dept. JADA-6, Racine, Wis., for a trial supply.

HORLICK'S
The Original Malted Milk
NOW AT NEW LOW PRICES

WHY DELICIOUS
Quaker Products Provide
BETTER NUTRITION AT LOWER COST

To those who know, there is no more honored name in the food industry than the name of QUAKER. A true pioneer, identified with the leaders in its field for over half a century, The Quaker Oats Company has held steadfastly to one objective . . . a constant betterment in its products at the least cost to those who use them.

Thus today, as always, you can depend on every product bearing the QUAKER name. You can expect each to be prepared under the highest standards of purity and sanitation, of the finest ingredients, with up-to-date equipment. More than that, each has behind it careful, scientific development, patiently worked out in modern laboratories and "proving kitchens," where each new discovery in nutritional science is tested and application made of the sound, the workable.

So it's no mere chance that every QUAKER product should become increasingly worthy of its reason for being—better nutrition at lower cost. A fact worth weighing carefully by everyone who has to do with the intelligent planning of diets.

FAMOUS QUAKER PRODUCTS INCLUDE: Quaker Oats and Mother's Oats, Puffed Rice, Puffed Wheat, Little Kurnels, Aunt Jemima Ready-Mix, Muffets Brand Whole Wheat Biscuits, Quaker Farina.

THE QUAKER OATS COMPANY

V-B-W
(VITAMIN B_1 WAFERS)

FOR VITAMIN B_1 DEFICIENCY

V-B-W, in appetizing wafer form, was developed to serve as a supplementary source of essential Vitamin B_1 in ordinary diets, and as a means of providing larger quantities of Vitamin B_1 when special or restricted diets are necessary.

Each V-B-W Wafer contains approximately 100 International Units of Vitamin B_1 (Thiamin Chloride). The wafers are prepared by a special process which assures a constant Vitamin B_1 potency, a fact substantiated by both biological and chemical assays conducted by competent university workers.

Each delicious wafer, while weighing only 3¼ grams and having a caloric content of but 15 calories, is equal in Vitamin B_1 potency to approximately 20 ounces of whole cow's milk, 5 bananas, 4 oranges, one pint of string beans, 1 1/4 pounds of potatoes, 4 slices of whole wheat bread, or 1/2 pound of calves' liver!

V-B-W Wafers can be served oven fresh to children and adults just as they come from the hermetically sealed cans in which they are packed, or may be dissolved in milk or water to form a gruel for infant feeding.

Since there is no single natural food which is outstandingly rich in Vitamin B_1 in the quantity normally eaten, V-B-W (Vitamin B_1 Wafers) has been specially prepared to supplement the daily diet. Reducing diets and many therapeutic diets are frequently inadequate in Vitamin B_1 because foods rich in this vitamin are necessarily eliminated or greatly restricted. Therefore, extra amounts of Vitamin B_1 other than those supplied by the food allowed must frequently be supplied in concentrated form.

ACCEPTED AMERICAN MEDICAL ASSN Council on Foods and Nutrition

Fill out and mail the coupon below now, for FREE samples and further details.

HILKER AND BLETSCH COMPANY
(Vitamin Products Division)
15-17-19 East Pearl Street, Cincinnati, Ohio

Please send me a free sample of Vitamin B_1 Wafers.

Name.....
Street.....
City..... State.....

Philadelphia General Hospital; member at large, Martha Tarbox, director of Food Clinic, Pennsylvania Hospital; chairman of nominating committee, Dorothy Mittelstadt, director, Dietary Department, Presbyterian Hospital.

Rochester Dietetic Association. The association has been cooperating with the Monroe County Medical Association again during the past year on educational radio programs. The following took part in these programs: Dr. Estelle Hawley, University of Rochester, "Vitamins"; Eleanor P. Fluke, Highland Hospital, "Special Diets"; Effie May Winger, Rochester General Hospital, "Food Fads"; Ellen Guernsey, Strong Memorial Hospital, "Weight Reduction and Weight Gain"; and Constance Hart, supervisor of School Lunchrooms, Rochester, "School Lunches".

The March meeting was held at the Highland Hospital with Dr. Robert R. Sealock, assistant professor of Physiological Chemistry, Department of Vital Economics, University of Rochester, speaking on "Recent Developments in the Field of the Less Well Known Vitamins". Mrs. Edmund Marth, chief dietitian, Highland Hospital, was the hostess.

Tennessee Dietetic Association. The annual meeting was held at the Hermitage Hotel, Nashville, April 1.

Salome Winckler, state president, presided at the business meeting at which the following officers were elected: president, Mary P. Wilson, George Peabody College, Nashville; vice-president, Elizabeth Terrell, City High School, Chattanooga; secretary and treasurer, Eugenia Upshaw, assistant dietitian, Vanderbilt University Hospital, Nashville.

Miss Wilson, as vice-president, presided at the morning session with the following speakers: Mr. Sam I. Bolton, director of the State Division of Hotel and Restaurant Inspection, "Sanitation and Health Protection in Hotels and Restaurants"; Mr. W. C. Brettschneider, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, "Federal Meat Grading Service".

At the welcoming luncheon Mrs. Elizabeth Burford, president of Davison County Dietetic Association, presided, and Mrs. Delbert M. Mann, Nashville, spoke on "Nutritional Problems in the Public Schools".

The afternoon session stressed the nutritional problems of children. With Ethel Johnson presiding, the following program was presented: Hazel Bolton, dietitian, Children's Hospital, Chattanooga, "Child Nutrition as it Concerns our Hospital"; Dr. Leonard F. Pogue, orthodontist, Nashville, "Practical Nutritional Suggestions Relating to the Teeth"; Dr. John Saunders, State Department of Health, "Maternal and Child Health Program in Tennessee"; and Sallie F. Hill, editor, Home Department; *Progressive Farmer*, "The Home Economics Woman in Journalism".

Members of the association were tea guests of Mrs. Burford at Scarritt College after the afternoon meeting.

Salome Winckler presided at the banquet with Mrs. Beula Becker Marble, president-elect of the A. D. A. speaking on "The Dietitian's Responsibility in her Modern Profession". Music was furnished by Margaret Johnson.

Texas Dietetic Association held the annual meeting March 24–25 in the Home Economics Building of the University of Texas. Mary E. Gearing, Department of Home Economics, University of Texas, presided at the first morning session, with the following program: Mrs. Beula B. Marble, president-elect of the American Dietetic Association, "Prognosis for the Dietetic Profession"; Nell Morris, dietitian, Texas State College for Women, "The Use of Frozen Foods"; Jennie Wilmot, assistant professor of home economics, University of Texas, "Precautions Necessary in Freezing and in Using Frozen Foods"; and Mr. Sam Lubow, Birdseye Frosted Foods, presenting a motion picture entitled "Commercial Freezing of Foods". During the afternoon session Dr. Jet Winters, Home Economics Department, University of Texas, spoke on "Recent Findings of Nutrition Research and their Application to Practical Dietetics".

Mrs. Azalete R. Little, dietitian, King's Daughters Hospital, Temple, presided at the morning session, March 25, with the following program: Mary Smith, head dietitian, Memorial Hospital, Houston, "The Hospital Dietitian as an Administrator"; Lou Elva Eller, director of School Lunchrooms, Houston, "The School Lunchroom Manager as a Buyer"; Mrs. Mary Lee Clark, dietitian, Southern Methodist University, Dallas, "The Administrative Dietitian as a Residence Hall Food Service Director"; and Dr. Grace Augustine, head, Institution Manage-

BREAD AND BUDGET PATIENTS

"BREAD PILLS" are not much used nowadays, but white bread is still a useful prescription for patients who want to lose pounds and save pennies.

Only 18 cents of the American food dollar goes for bread and other cereal products, yet these supply 38% of the calories, 37% of the protein, 30% of the phosphorus, 16% of the calcium, and 26% of the iron in our national diet.

When you remember that 98% of bread is assimilated, you can readily understand the importance of white bread as a body builder.

To patients suffering from overweight, white bread is a useful dietary. It offers a safe way to reduce with the utmost economy, since it provides a high proportion of the necessary food values.

The latest facts on bread nutrition and a reducing diet built around the balanced carbohydrate content (about 50%) of white bread are contained in the booklet, "The Physician and Our Daily Bread", which has been accepted by the Council on Foods of the American Medical Association.

Copies will be sent on request.

American Institute of Baking

DEPARTMENT OF NUTRITION

9 ROCKEFELLER PLAZA, NEW YORK, N.Y.

(In writing advertisers, please mention the journal.)

ment Division, Texas State College for Women, "The Administrative Dietitian as an Executive Housekeeper in College Residence Halls".

The executive committee of the association went on record as endorsing the movement to secure definite status for dietitians who serve in the army.

Virginia Dietetic Association, throughout the year 1938–1939, has been concentrating its work on increasing the membership and providing an excellent program at the annual meeting which was held in Roanoke, April 20–22, in conjunction with the Tri-State Hospital Association.

The members of the state dietetic association were guests of the Tri-State Hospital Association at a banquet on Thursday, April 20. Dr. Harvey Agnew, president of the American Hospital Association, was the guest of honor.

A joint session of the Virginia Dietetic Association and the Tri-State Hospital Association convened on April 22. Ernestine Becker, Johns Hopkins University, reported on "Recent Progress in Vitamin Research". Various phases of the subject, "Administration", were discussed by Dr. John Bell Williams, Richmond, and Mr. W. N. Walters, Roanoke. Anna M. Tracy, president of the American Dietetic Association, spoke on "Dietary Problems and their Solution from a Dietitian's Viewpoint." The discussion of these papers was led by Dr. Agnew.

At the luncheon, attended by members of the state association, with Aileen Brown, vice-president, presiding, the dietitians were welcomed to Roanoke by the president of the Southwestern Virginia Dietetic Association, Ella Sue Carr. The speakers at the luncheon presented the viewpoints of a college student, a student dietitian and a graduate dietitian.

At the afternoon session, the subject of administration was further expanded in talks by Colonel E. W. Jordan, Veterans Administration Facility, Roanoke; Grace Bulman, Veterans Bureau, Washington, D. C.; and Mrs. Anna P. Sells, Columbia University, New York City.

The Tidewater Dietetic Association, in honor of its tenth anniversary this year, gave a birthday tea in the afternoon to which all members of the Virginia Dietetic Association were invited.

The round table discussion on Saturday morning was led by Miss Tracy and Miss Bulman. As all dietitians, institutional and otherwise, have administrative problems, this discussion proved to be one of the most interesting on the program.

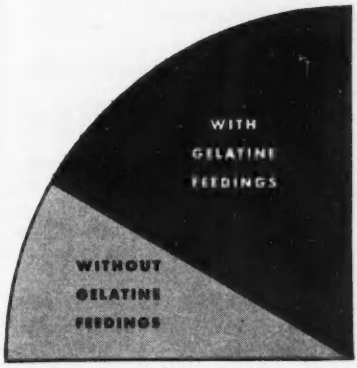
The Virginia Dietetic Association has increased its membership during the past year. Both old and new members have been active and enthusiastic in their efforts toward a larger organization. The Richmond group, one of the branches of the state association, in an effort to stimulate more interest, has issued a newspaper. The first copies appeared in February and were mailed to every dietitian in the state. The editors and sponsors of this paper received much praise for the first issue.

The Southwestern Virginia branch of the state association has done some work with public welfare and public health agencies that proved to be interesting. They have held regular meetings during the year, and report that the sessions have been well attended.

The Richmond branch has held regular monthly meetings, with good attendance all through the year. One meeting was devoted to book reviews; one to school lunchroom management; and another, a dinner meeting, to commercial cafeteria management. The latter meeting was held at Ewart's Cafeteria, the speaker of the evening being the cafeteria manager.

Wisconsin Dietetic Association held its annual meeting at the Schroeder Hotel, March 24–25. The total registration was eighty-one.

Ada B. Lothe of Milwaukee County Institutions presided at the Friday afternoon session which was devoted to reports of "Current Progress". The following were the speakers and their subjects: Frances Kelley, Veterans Administration Facility, "Post Graduate Work in Dietetics"; O. Grace Clark, Milwaukee County Hospital, "1939 Professional Education"; Doris Johnson, State Sanitarium, Wales, "Community Education"; Hedwig Poehler, Milwaukee City Health Department, "Public Health Agencies"; Lucile K. Billington, Wisconsin State Board of Health, "Starting a New State Program"; Mrs. Walter Blount, chairman, Milwaukee Citizens' Committee, "Citizens' Committee Faces Problem of Domestic Employment"; Breta L. Griem, Gridley Dairy Company, "Food Study and Cost"; Irma Hochstein, superintendent, N. Y. A. Girl's Project, "An Experiment in Cooperative Living"; Metta Bean, director, social service,



Light area represents a day's energy output by a test subject during the training period before gelatine feedings were started. Dark area represents a day's energy output by the same subject after gelatine feedings. In both cases the subject worked to the point of exhaustion.

Muscular Energy Doubled

By PLAIN KNOX GELATINE (U.S.P.)

Recent physiological research has confirmed the importance of the phosphocreatine phase in muscle contraction in a group of male subjects, and has shown that energy output can be increased by more than 100% through "concentrated" feedings of plain Knox Gelatine (U.S.P.).

"Proceedings of the Society for Experimental Biology and Medicine", 40: 157, 1939.

Knox Gelatine is high in certain amino acids, which are precursors of muscular creatine. Thus, by increasing the phosphocreatine content of the muscle, Knox Gelatine increases its chemical store of potential energy.

The gelatine used in this study was plain Knox Gelatine (U.S.P.) which assays 85% protein and which should not be confused either with inferior grades of gelatine or with sugar-laden dessert powders, for these latter products will not achieve the desired effects. When you desire pure U.S.P. Gelatine, be sure to specify KNOX. Your hospital can get it on order.

EXTRA ENERGY FORMULA

Empty one envelope of Knox Gelatine in a glass three-quarters filled with cold water or fruit juice (or half water and half fruit juice). Let the liquid absorb the gelatine. Then stir briskly and drink immediately before it thickens. Take four times a day for two weeks, then reduce to two envelopes a day. (May be taken before or after meals).

Write Dept. 466

KNOX GELATINE LABORATORIES

JOHNSTOWN NEW YORK

Please send literature on the use of Knox Gelatine to increase energy.

Name_____

Street_____

City_____ State_____

Wisconsin Anti-Tuberculosis Association, "What Diet Problems Come to the W. A. T. A."

Questions supplied by Jean Templeton of the Milwaukee *Journal* woman's page were answered by Milwaukee-Downer College students in an "Information Please" program with Breta L. Griem asking the questions.

Lillian Otto Fried of Ann Emery Hall, Madison, presided at the annual banquet. The dinner speakers were Dorothy Caraty, director, Women's Division, United Air Lines, and Bernice Weigert, stewardess, United Air Lines. Following their talks, Nancy Grey discussed "What to Wear and What to Do When You Get There", a subject designed to assist Wisconsin dietitians who are flying to the California meeting.

The Saturday morning session opened with a "brunch." A business meeting was then held and the newly elected officers were announced as follows: president, Ethel Keating, Milwaukee County Hospital, Wauwatosa; president-elect, Doris Johnson, State Sanitarium, Wales; secretary, Anita Schaefer, Sheboygan Memorial Hospital, Sheboygan; treasurer, Breta L. Griem, Gridley Dairy Company, Milwaukee. The Saturday morning speakers were: Dr. George Kelly, "The Clinical Care of the Diabetic Child"; C. A. Patterson, editor, *School and College Cafeteria*, "Making the School Lunch Count"; Olaf Mickelsen, Ph.D., University of Wisconsin, "Recent Studies on Vitamin Content of Meat and Meat Products."

The afternoon field trip to Holton and Hunkel Greenhouses was sponsored by the Milwaukee Dietetic Association. Dr. Victor Hunkel talked on "Plant Propagation"; Dr. E. McDonough of Marquette University, "Plant Deficiencies"; and Albert Fuller, Milwaukee Public Museum, "Native Wisconsin Orchids".

The meeting closed with dinner at Baernwald's with Margaret Alt, president of the Milwaukee Dietetic Association, presiding.

Anita Shaefer of Sheboygan Memorial Hospital and Frances Kelley of Veterans Administration Facility attended the refresher course at the University of Minnesota.

Beulah Anderson has accepted a position at Milwaukee Hospital.

Catherine Coffey, a student at Montefiore Hospital, New York City, returned for a short period to visit her family.

Wisconsin dietitians were hostesses at a "Food Festival" sponsored by the Wisconsin Department of Markets.

June Reifis is assisting Isla Jepson at Madison General Hospital.

Nell Clausen, Milwaukee Children's Hospital, spoke at the February meeting of the dental hygienists on "Nutrition in Childhood". She also talked at the March meeting of the Mother's Club of the 37th Street School on "Diet and Rest".

The January meeting of the Milwaukee Dietetic Association was held at Milwaukee-Downer College. After a typical English dinner of roast beef, Yorkshire pudding and English trifle, Susan F. West, director of home economics, spoke on "Newer Trends in Home Economics".

Sister Mary Albert and students of Mount Mary College entertained the Milwaukee Association at dinner in February. The students in nutrition at the college presented a résumé of the vitamins.

News from Our Advertisers and Exhibitors. The Home Economics Division of the *National Canners Association* is distributing copies of a leaflet entitled "Easy Recipes Using Canned Foods." This collection of recipes, developed in the association's service kitchen, includes excellent new recipes and sample menu combinations for a variety of services.

Hoffmann-La Roche, Inc., of Nutley, N. J. announces that Vi-Penta Perles will contain 50% more vitamin B_1 than heretofore. Previously each perle contained 0.2 mg. of this vitamin. Hereafter each will contain 0.45 mg. or 150 I.U. Elixir Berocca is now an extremely palatable vehicle for vitamin B_1, having been flavored with a sherry wine base and the tang of orange peel.

Robert R. Helmerichs, who for a number of years has had charge of an exhibitor's booth at the annual meetings and who is well known to members of the A. D. A., is now affiliated with *The Cream of Wheat Corporation* of Minneapolis. Mr. Helmerichs writes that the new 5-minute Cream of Wheat has been enriched with vitamin B_1 in the form of stabilized wheat embryo, and with significant amounts of phosphorus, calcium and iron, in the form of tricalcium phosphate, disodium phosphate and ferric ortho-phosphate.

The *California Fruit Growers Exchange* announces that an educational color and sound

Do You Receive

THIS SERVICE EVERY MONTH?

• Write for the Kellogg Menu and Recipe Service. Every month our Home Economics Department will send you menu suggestions, recipes, and pointers on food preparation. Many dietitians find them particularly useful.

We'll tell you how to make All-Bran muffins, the most delicious muffins you've ever tasted, and a host of other All-Bran delicacies.

Send to the Kellogg Co., Dept. D6, Battle Creek, Michigan, and catch that mailman on his very next round!

can't tolerate **PLAIN MILK?**

.. SUGGEST RENNET CUSTARDS

• Where patients experience digestive discomfort from plain milk, rennet custards are often tolerated easily. The addition of the rennet enzyme causes the casein in milk to form soft, flocculent curds which digest more easily than plain milk.

FREE . . . Ask on your letterhead for our new book: "Dietary Uses of Rennet Custards," and for samples of "Junket" Food Products. Address Dept. 257.

"THE 'JUNKET' FOLKS"
Chr. Hansen's Laboratory, Inc., Little Falls, N. Y.
(In Canada, Toronto, Ontario)

"JUNKET" RENNET POWDER
TRADE-MARK

(In writing advertisers, please mention the journal.)

motion picture entitled "Citrus on Parade" is now available to all groups, associations and food distributors and may be concentrated into one hour or extended in more detail to one hour and a half. Thirty-four citrus fruit recipes are shown in preparation. Among the recent displays of this picture was one attended by the International Stewards and Caterers Association. The picture has been enthusiastically received by audiences made up of restaurant and hotel executives, chefs, dietitians and food instructors.

The *Kellogg Company* of Battle Creek, Michigan, through Mary I. Barber, director of its Home Economics Department, invited a special group of women interested in food production to be their guests in Battle Creek on March 31–April 1. At a luncheon meeting executives of the company discussed new developments in the food industries, following which visitors were taken on a trip through the plant to see some of the most modern equipment in the field. Members of the Home Economics Department arranged an exhibit of cereal cookery and gave several demonstrations of cookery technic.

Mead Johnson & Company offers free copies of "Parergon" which tells of the artistic hobbies of physicians. The content should be of interest to others than physicians, for all professional people may profitably find diversion in some collateral branch of science. Among the various avocations suggested will be found the fine arts, the lore of birds, the cultivation of flowers and shrubs, and the development of latent artistic senses not necessarily directly related to the daily profession.

THE AMERICAN DIETETIC ASSOCIATION

AVAILABLE REPRINTS

Community health education. Vivian V. Drenckhahn. 1938	$.10
Dental interns, Teaching nutrition to. Ruth L. White. 1938	.10
Diabetic, young, The life of the. Priscilla White. 1935	.10
Diet in insulin shock therapy. Waide and Hastings. 1938	.10
Dietary departments, The organization of several. Marjorie Dunlap. 1938	.10
Dollar, food, Distribution of the students', as spent by 23 colleges and universities in 31 dormitories and cafeterias. 1937	.10
Early dietetics. Sarah Tyson Rorer. 1934	.25
Food administration, Standardization trends in. Isola Denman. 1931	.15
Food, hospital, Preparation and service of. Neil MacDonald. 1938	.05
Food, Some public health aspects of. James E. Fuller. 1938	.05
Food, Poisons in—fantasy or fact? T. Swann Harding. 1938	.05
Fruits and vegetables, Classification of, according to their carbohydrate content. Georgian Adams and Charlotte Chatfield. 1935	.10
Labor, good, Maintaining standards in the hotel and restaurant industry. Marian L. Mel. 1937	.15
Labor policies in college residence and dining halls. Grace M. Augustine. 1939	.20
Labor policies in hospitals. Grace M. Augustine. 1938	.20
Meats, Cooked, and poultry classified by chemical composition. Charlotte Chatfield. 1937..	.10
Medical students, Applied dietetics for. Mabel W. Perry. 1938	.10
Medical students, Teaching nutrition to. Estelle E. Hawley. 1938	.10
Mineral additions to the soil, Correlation of copper and manganese content of plants and. Lila Miller and Helen S. Mitchell. 1931	.10
Nursing curriculum, The place of nutrition in the. Henderika Rynbergen. 1938	.10
Nutrition and the health of the school child. Mary S. Rose. 1939	.15
Personnel management in the dietary department. Ruth H. Carpenter. 1938	.05
Recipe writing and arithmetic. Mary I. Barber and Katherine H. Gordon. 1939	.10
Relief service, transient, The dietitian in. M. Faith McAuley. 1936	.10
Sanitation score-cards for school lunchrooms. Olive Fay. 1939	.10
State institutions, The dietitian in. Florence Peters. 1938	.10
State institutions, California, Food control in. Jane Sedgwick. 1938	.10
Vegetables, fresh, and the fuel consumed, A study of the waste in preparation and in cooking of. Elizabeth F. Whiteman and Florance B. King. 1938	.10
Vitamins and hormones. John R. Murlin. 1938	.10
Vitamins, Nomenclature and human requirements of. J. Ernestine Becker. 1939	.10
*The Food Budget. 1937	.50
*Examination Questions for Nurses in Normal Nutrition and Modifications of the Normal Diet in Disease. 1935	.25
*Suggested Questions for Nurses Examinations in Normal Nutrition and Diet Therapy. 1937.	.25
*Courses in Nutrition for Nurses. 1938	.50
*Allergy Diet Recipes. 1938	.50

* These are reports of separate problems which have never appeared in the JOURNAL but have been printed for distribution.

WHO'S WHO

Thelma Porter, M.A. University of California, and Ph.D. University of Chicago, was formerly head of the Department of Physiology and Nutrition, Battle Creek College. Later Dr. Porter was engaged in teaching and research at the University of Chicago and on the food economics staff of the Bureau of Home Economics. Her research interests are in the field of child nutrition. At present she is assistant professor and research assistant in the Department of Foods and Nutrition in the Division of Home Economics, Michigan State College.

Howard W. Haggard, M.D. (Yale) is director of the Laboratory of Applied Physiology, Yale University. Formerly he was instructor in physiology in the medical school of the same university and later assistant professor and associate professor in applied physiology in the Sheffield Scientific School. Dr. Haggard is a member of the American Society of Biological Chemists and the American Physiological Society. His research interests lie in the field of physiology pertaining particularly to industrial problems. Among his most widely known writings are *Devils, Drugs and Doctors; Mystery, Magic and Medicine; The Doctor in History;* and *The Anatomy of Personality.* Leon Greenberg holds the Ph.D. degree from Yale University, and is research assistant in the Laboratory of Applied Physiology. He is a co-author of many of Dr. Haggard's publications.

Julianna Smith McCord, M.S. Indiana University, is a member of the American Dietetic Association, the Indiana Dietetic Association and the Ota Sigma Pi. Mrs. McCord was formerly dietitian at the Indiana University Cafeteria at Bloomington. At present she is doing consultant work at Oaklandon, Indiana.

Harriet Morgan Fyler, Ph.D. Cornell University, was formerly assistant professor and head of the Division of Home Economics, College of Agriculture, University of California. At present Dr. Fyler is on the staff of the Council on Foods of the American Medical Association. She is a frequent contributor to *Hygeia, The Trained Nurse and Hospital Review, Practical Home Economics, The Home Desirable,* and *American Cookery.*

Louise Pickens Tanner, Ph.D. (food chemistry), was a member of the foods staff of the Home Economics Department of the University of Illinois from 1928 to 1936 when she resigned to be married. Mrs. Tanner is the wife of Dr. F. W. Tanner, bacteriologist of the University of Illinois.